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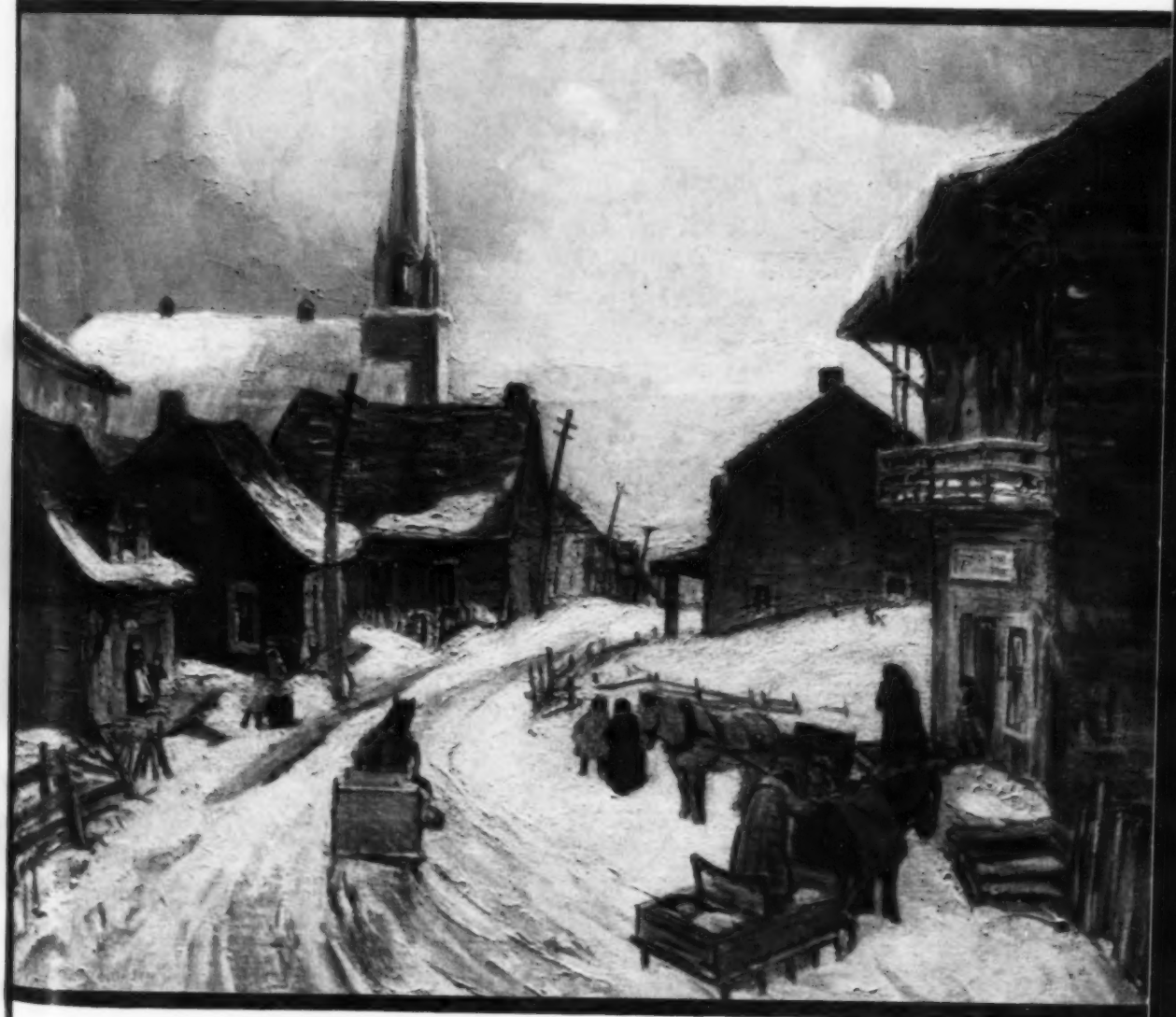

"Late Winter, St. Urbain, P. Q." F. W. Hutchison, N.A., R.C.

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As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geography—historical, physical and economic—first of Canada, then of the British Empire and of the other parts of the world in which Canada has special interest. It is the intention to publish articles in this magazine that will be popular in character, easily read, well illustrated and educational to the young, as well as informative to the adult.

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Plates courtesy *The Seigneur*, magazine of the Seigniory Club

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Britain's National Building Record

by J. D. U. WARD

SECURED BY their moat from the ravages of war which from time to time swept through the continent of Europe, the people of the British Isles accepted their rich heritage of architecture without thought; they "took it for granted". Thus, while nearly all the countries of Europe had recorded their architecture methodically, Britain failed to do so. Of Lübeck and Munich, as they were before devastation, there are proper records; of Bristol and Coventry there are not.

Only when the *Luftwaffe* came across the moat was there any national awakening, and not until November, 1940—when considerable damage had already been done—was a conference held at the Royal Institute of British Architects to discuss the surveying and recording of buildings. Thirty-three delegates from eighteen societies and public bodies attended to consult with the Minister of Works. A committee of four was appointed: Mr. W. H. Ansell, President of the R.I.B.A., Sir Kenneth Clark, Director of the National Gallery; Mr. Walter H. Godfrey, Chairman of the London Survey Committee and of the Architectural Graphic Records Committee; and Mr. John E. M. Macgregor, Secretary of the Society for the Protection of Ancient Buildings. Lord Reith promised his full support, which included, in effect, a grant from the Treasury, and so, with Lord Greene, Master of the Rolls, as chairman, the National Buildings Record came into being.

The direction of the National Buildings Record was entrusted to Mr. Godfrey, who had been chairman of the London

Left:—Old windmill at Rye, Sussex

Inset:—The ancient dovecote (with three dormer windows and cupola) at Richard's Castle, Herefordshire; its walls are almost four feet thick, and it contains 630 nests.

Top right: — Eighteenth century gravestone, Sussex

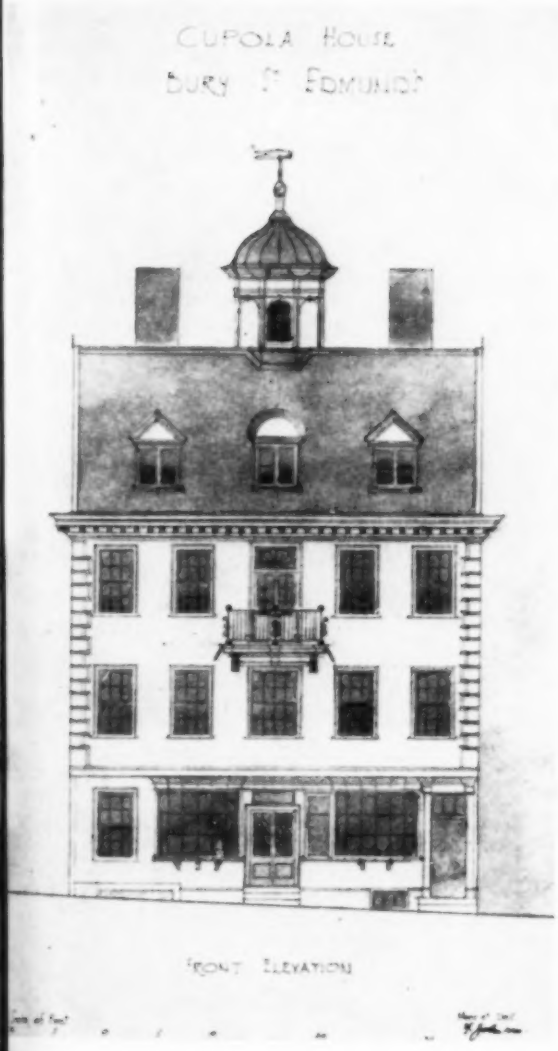
Right: — Close-up of entrance to the old Waggon and Horses Inn — mentioned by Charles Dickens —at Beckhampton, Wiltshire. (Note the wire netting stretched over the thatch to keep out vermin.)

Old church at Chelse
—completely destroye
during the London blit

Courtesy of The British Coun

Almshouses at Goring Heath, Oxfordshire

Pakefield Church
good example of
thatched East Anglic
church), whose roof wa
entirely destroyed b
bombing.

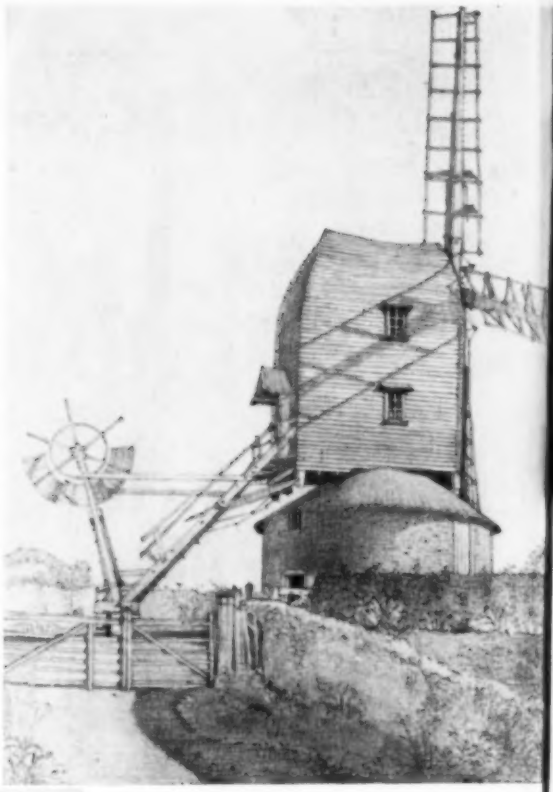


Survey Committee for many years and had constantly urged the need for architectural recording on a national basis. Such recording as had already been accomplished was piecemeal and unco-ordinated. The phrase, "historical monuments", had been interpreted liberally to include houses and cottages, but the commission responsible, which made 1714 its latest recording date, had, in thirty years, been able to touch little more than the fringe, despite the fact that its aim was an inventory rather than a full, graphic survey. There were also, before the National Buildings Record was begun, a few recently-formed county records committees, such as those in Berkshire and Hampshire; but the nucleus of existing records was not nearly as large as might have been wished.

The programme before the N.B.R. was: (a) to maintain a central index or register of records of buildings; (b) to record war-damaged buildings; and (c) to record buildings before they were damaged. But damage was being done nearly every night. The raids of March 19 and April 16 and 19 were specially destructive, and so the last of these projects was undertaken without delay; photographers were engaged and many new records were made in the metropolitan area. The London County Council, The London Survey Committee and several volunteers helped. The listing of buildings

An architect's measured drawing, by F. Johnson, of the Cupola House, Bury St. Edmunds. This is a superb example of an English Renaissance house.

Queen Anne's Gate
Photo by E. R. Jarrett



Architects' drawings by S. J. Wearing of:

Top left:—
Potter Heigham Church, showing tower and thatched roof.

Top right:—
The old mill at Sprowston, Norwich

Left:—
The Dolphin Inn at Heigham, Norwich (dated 1595)

Right:—
Bridge at Wiveton, Norfolk

A sixteenth century English country house with Elizabethan brickwork (Shaw House at Newbury, Berkshire, 1583)

Seventeenth century English country house (Westwoodhay House, Berkshire); the porch and two lower floors, reputed to be by Inigo Jones, were built in 1637, while the top story is a late-Victorian addition. (Photographs of the house as it was before the addition are, fortunately, extant.)

throughout the country was facilitated by the Ministry of Works' appointment of some 328 panel architects to schedule buildings of merit within their regions and to report on damage. The N.B.R. itself prepared special lists for towns such as Bristol, Coventry, Birmingham, Hull, Southampton and Plymouth.

In tracing and indexing existing records, the N.B.R. was greatly helped by the Courtauld Institute of Art, which deposited the Conway Library, containing over 100,000 photographs, with the N.B.R. and lent the services of their librarian. Indexing presents greater difficulties than the layman might think; the Conway Library was compiled on a date-and-materials basis, so that photographs of different parts of Westminster Abbey, for example, had to be sought in different sections from the thirteenth to the eighteenth century. But the N.B.R. and the Conway Library now file on a topographical plan; county by county, town by town, parish by parish, and building by building is the rule. In the

Gibson Square, N.W. Islington, London
Courtesy of *Country Life*

course of indexing the existing records, widespread inquiries were made and contact was established with many public and private collections. The basis of one central index was received from the Architectural Graphic Records Committee, which had prepared a card index, now placed at the disposal of the N.B.R., of about 50,000 drawings and engravings, and many officials and private persons helped to transcribe catalogues of local collections.

As a result of a visit by the Master of the Rolls to the United States of America, the Rockefeller Foundation offered to bear the cost, up to £3,500, of a staff of photographers, on condition that they make records in the vulnerable areas during the following twelve months. Accordingly, more detailed and systematic work was done at Newcastle, Liverpool, Leeds, Hull, Birmingham, Coventry, Norwich, Colchester, London, Bristol and along the coastal area from Dover to Plymouth. Exeter may provide an example of the work achieved: after one night raid, immediately light permitted, an N.B.R. photographer was at work, and went on taking photographs until the light failed. A few hours later, the city was again raided, and some of the photographed buildings were destroyed.

When in May, 1942, the Germans made their 'Baedeker' raids, efforts were immediately switched to completing the records of cathedral cities and old county towns, with the aid of a special grant from the Pilgrim Trust. Some figures for one city, Canterbury, may be quoted from the second annual report of the N.B.R.:—

Cathedral:	
Photographs of fabric and fittings existing in the Conway (Courtauld) collection, with chance acquisitions since 1941	485
Supplementary photographs of fabric taken by N.B.R.	149
Monuments taken by N.B.R.	130
City (including churches, almshouses, domestic buildings, streets, etc.) and photographs of bomb damage:	
Prints from local collections	122
Photographs specially taken by N.B.R.	372
	1,258

Of Norwich, rich in fine architecture, nearly 1,000 photographs were taken, and more than 800 were made of Bristol and Clifton. Later in the year, there was a change in the German bombing policy; small towns and villages and rural areas were attacked, and recorders were busied with making 150 photographs each of such places as King's Lynn, Rye and Bradford-on-Avon.

But any one who thinks that buildings were photographed in detail merely that they might be rebuilt if destroyed misunderstands the main purposes of the N.B.R. Begotten by the war for a task made specially urgent by aerial bombardment, the N.B.R. is not just another temporary state scheme to be axed when peace returns.

Ford's Hospital; this almshouse at Coventry was very seriously, but not irreparably, damaged by a bomb in 1941.

Chelsea Hospital, London—an almshouse for army pensioners

In certain places, destroyed or damaged buildings may be reconstructed from records. There has, for example, been much discussion about some of Wren's London churches; and such a famous almshouse as Ford's Hospital, Coventry, which was very severely blasted rather than razed, might well be restored. But whether a destroyed building should be rebuilt or replaced by a wholly modern work must depend on circumstances and on how the people chiefly concerned feel about it. Was the old building fulfilling its purpose so well that improvement is impossible? What materials and what craftsmen are available? The very fact that the N.B.R. collects records of buildings which were deliberately demolished before the war, because there was no further use for them, is proof that rebuilding is not the first object of recording.

In very many instances, building records are chiefly useful to students of architecture, and that term comprises all amateurs or lovers of architecture as well as practising architects and their pupils. It is all too true that familiarity breeds contempt. In the past, as already noted, most of us English have taken our architectural heritage for granted; we pass Wren's Chelsea Hospital without a thought, and we recall Queen Anne's Gate only as a pleasant residential backwater in Westminster. Yet Carlyle, the sage of Chelsea, once observed that he thought the more of Wren from the moment he knew that the Hospital was his work, and the sight of Queen Anne's Gate evoked from a Danish friend of Mr. Godfrey's the comment that—in domestic architecture, the English seemed to have left off, more than a century ago, where the rest of Europe had only lately begun! Such eighteenth and early nineteenth century town plan-

The Guildhall at Thaxted, Essex
Courtesy L.N.E.R

ning as may be seen on the northern side of London, in Bath and in Cheltenham, though commonly overlooked by the man in the street, is the delight of architects and those visitors from overseas who come with fresh eyes and wide knowledge.

We are, perhaps, a little more alive to the sentimental appeal of vernacular buildings in market towns, villages and the countryside at large—where cottages of the chocolate-box, Christmas card and calendar types receive many gushing tributes to their prettiness. But, even among the so-called intellectuals, appreciation tends to be limited to places which have become "starred", such as Lavenham in Suffolk, Finchingfield in Essex, or such Cotswold gems as Broadway, Burford and Bibury, or Castle Combe, Lacock, Clovelly and Polperro. If the guide book says the place is beautiful, it may be noticed and partly appreciated; but if the traveller merely happens to pass through (let us say) the town of Abingdon, he will very probably fail to notice the town's good architecture, and the superbly beautiful market hall (perhaps the finest in all England) is likely to receive less notice than some quaint inn.

Here it is worth remarking on the special desirability of recording market halls and other buildings for which there may no longer be the need there once was. More than one good market hall has been demolished as an obstruction (there was once a scheme to destroy even the famous market cross at Chichester, because it obstructed traffic), while such buildings as wind and water-mills, tithe barns, dovecotes and granaries are all the time falling into ruin. Of course, there is always the possibility of repair or restoration; if, for example, England's economy were to become less centralized, the old need for market halls and water-mills (fitted with modern turbines) might revive; and such a scheme as Sir William Beveridge's, wiping out workhouses, might create a demand for more and better almshouses.*

The task of the N.B.R., however, is not so much to determine whether or how records of buildings shall be used as to collect and collate the best possible records from an architectural point of view. It

* In England, the almshouses (residences for poor or aged people) were usually built and endowed by private charity; frequently better treatment is given to their inmates than to those of the publicly-supported workhouses.

seeks to gather together and index records of all good buildings, with no date limit, and no exclusion of work because it is sacred or secular, too important or too trivial. Great cathedrals and abbeys, parish churches and small chapels-of-ease, castles and cottages built of local materials, such as cob or hard chalk, relatively seldom used to-day—all are admitted to the files. Even the tiny parish prisons and old lock-ups which survive in many villages are considered of interest.

Of buildings which have long since disappeared there often survive paintings, old prints or even photographs. It is good also that people should be reminded how famous buildings have changed within the memory of living man; Mr. Cecil Farthing, the Conway Librarian, produced interesting pictures showing how different was the appearance of, for instance, Shakespeare's birthplace, and Staple Inn, Holborn, less than a hundred years ago, and there is a particularly interesting trio of pictures illustrating Broughton Hall, Staffordshire, in three different centuries.

Among the best records are measured drawings, and some art schools are now encouraging their pupils to make them for the N.B.R. But often an 'ordinary' faithful drawing is valuable as a record; important structural details which the camera might not emphasize will impress the trained eye of the artist. Yet, when all is said and done, the vast bulk of the recording work is by photography. Straightforward photographs, sharp and well-defined, are excellent; impressionistic and pictorial photographs, such as those which show buildings through mist or at twilight, do not make good architectural records. In short, the recorder behind the camera should be a Canaletto rather than a Whistler.

Top:—Chichester market cross, built by Bishop Storey circa *1500.*

Right:—The Market Hall at Abingdon, Berkshire, often judged to be the most beautiful market or town hall in the whole of England.

Courtesy of *Country Life*

Right: — Corner of Guildhall, Lavenham, Suffolk

Below:—Old houses at Lacock (a picturesque Wiltshire village) recently given by the owner, Miss Talbot, to the National Trust.

Centre;—Cottage at Finchingfield, Essex

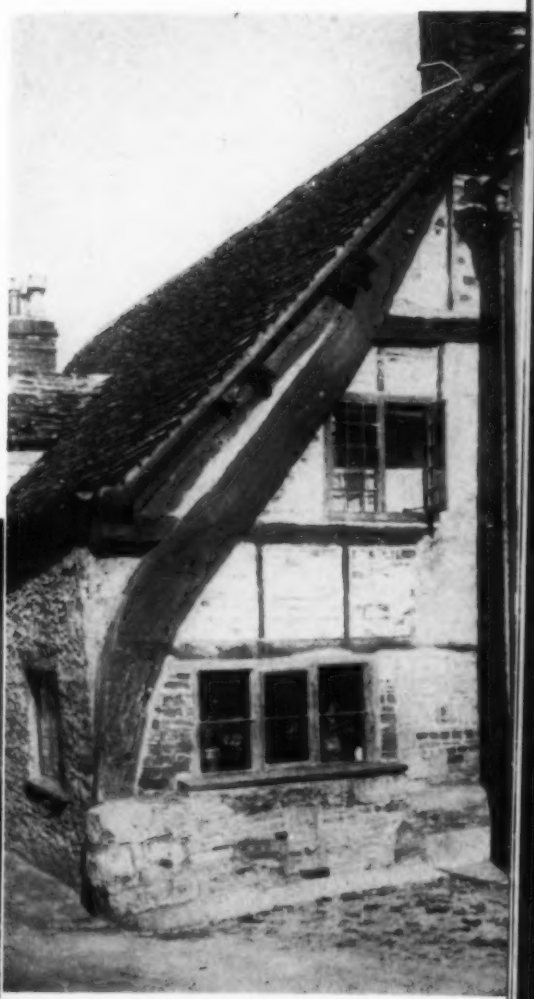
Below:—The village of Finchingfield, Essex

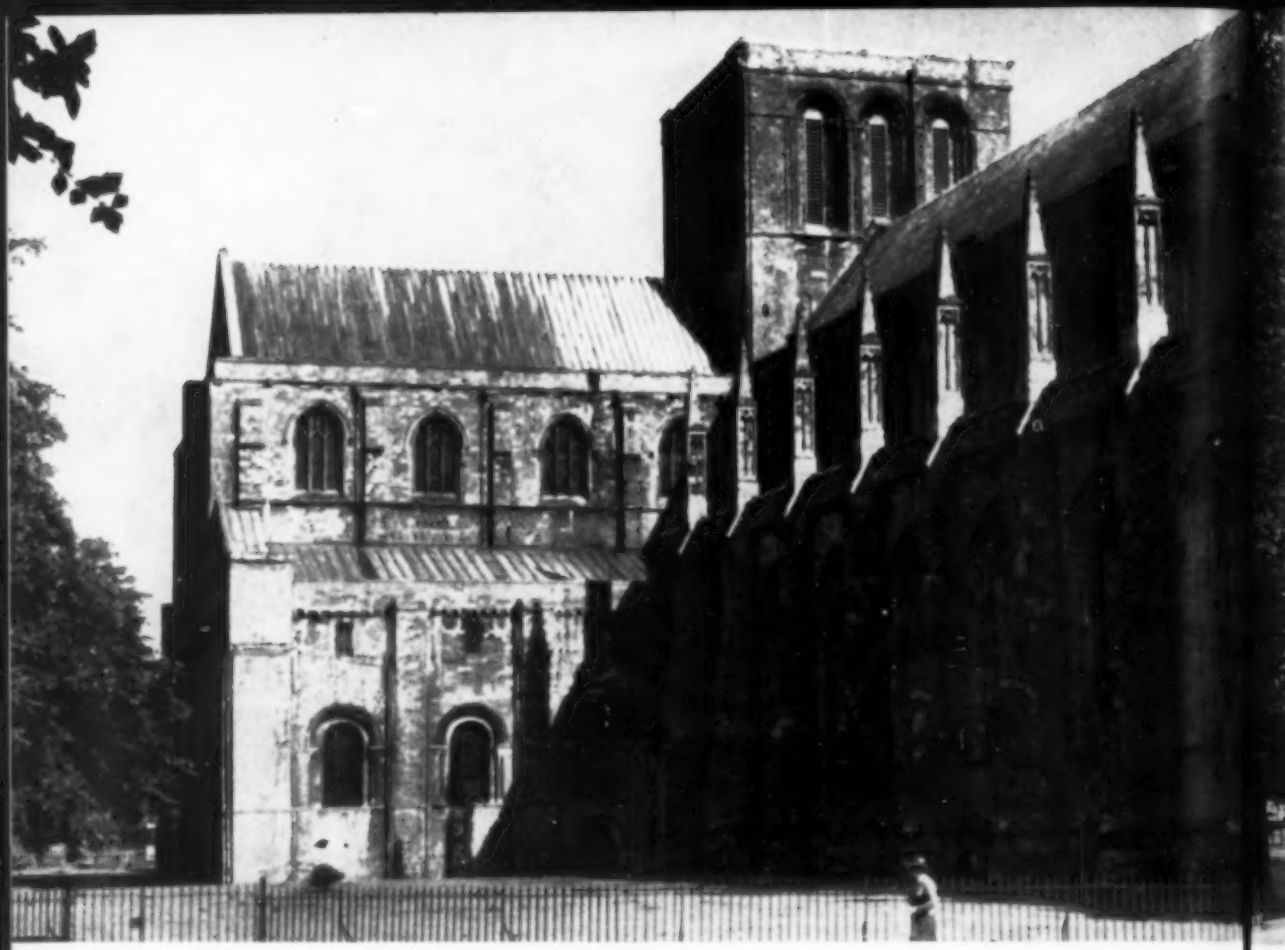
Left:—Rye, Sussex; this charming little fishing town, once the home of Henry James and E. F. Benson, has been bombed since this picture was taken.

Southern Railway photo

Below:— Fifteenth century cottage at Lacock, Wiltshire—showing cruck construction.

Below:—Flemish weavers' houses at Kersey, Suffolk





Northwest section of Winchester Cathedral

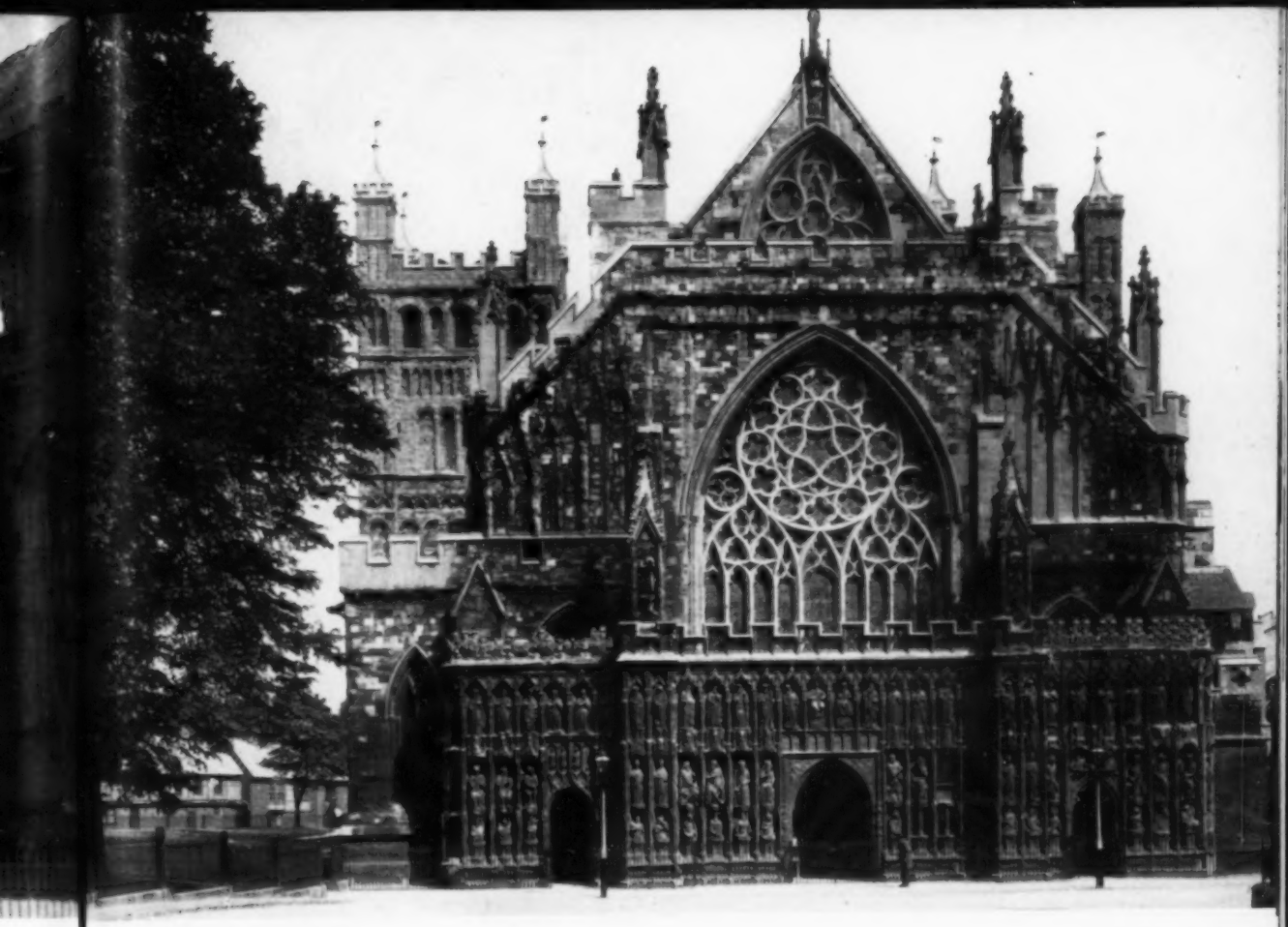
The ordinary lover of architecture is helping in this work of recording good buildings both by donating existing negatives (or prints) and by taking special photographs —for which priority materials can be obtained by approved helpers. Most of the southern and eastern and some midland counties now have their own photographic survey or architectural recording committee, whose secretary enlists help and explains in what particular areas an amateur recorder can most usefully co-operate.

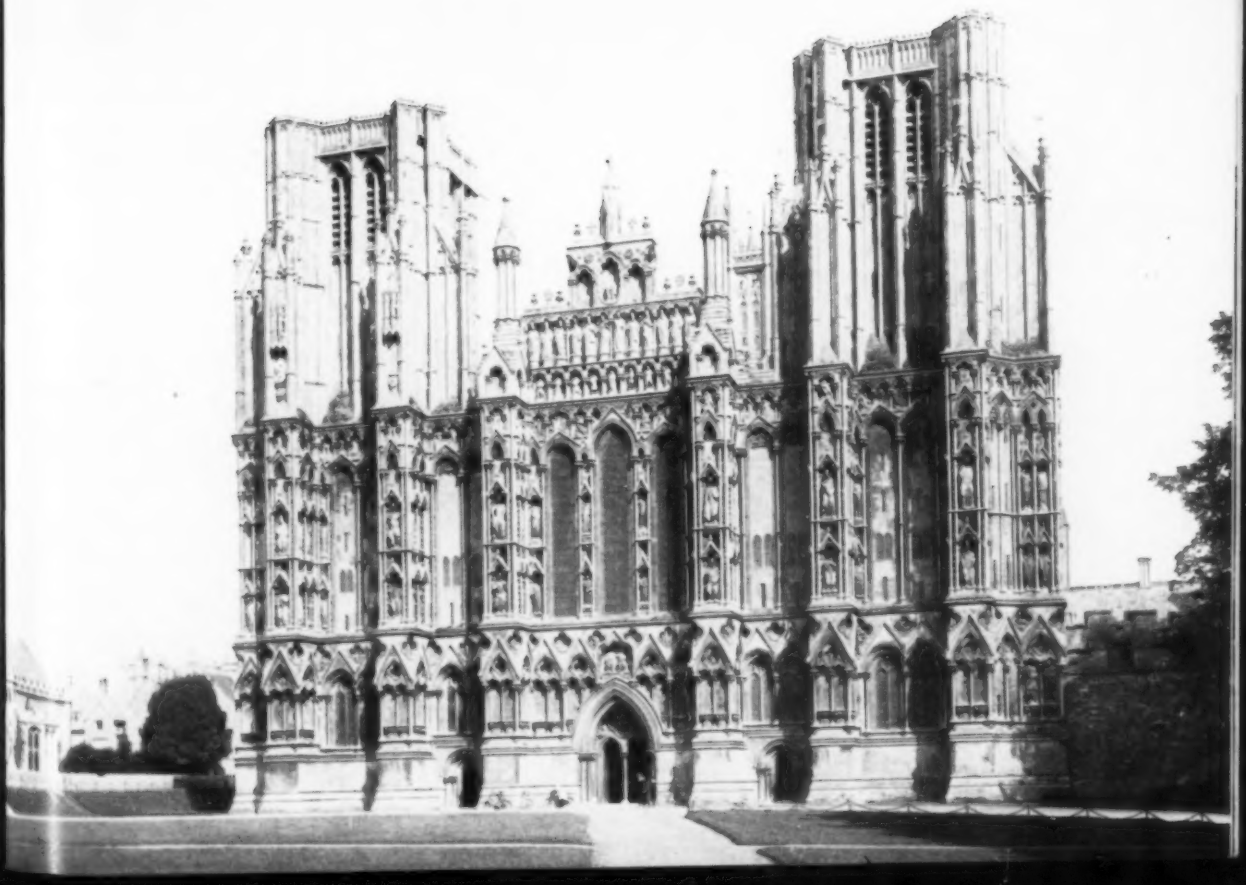
Top right:—Exeter Cathedral, one of the glories of Devon. The land on which it stands has been consecrated to religious worship since the far-off Anglo-Saxon days. It was William the Conqueror who started building the cathedral, but not until over a hundred years afterwards was it completed by Bishop Marshall. Alterations or embellishments during succeeding centuries made it a veritable gem of architecture, but it was, unfortunately, destined to be hit and damaged by a bomb during World War II.

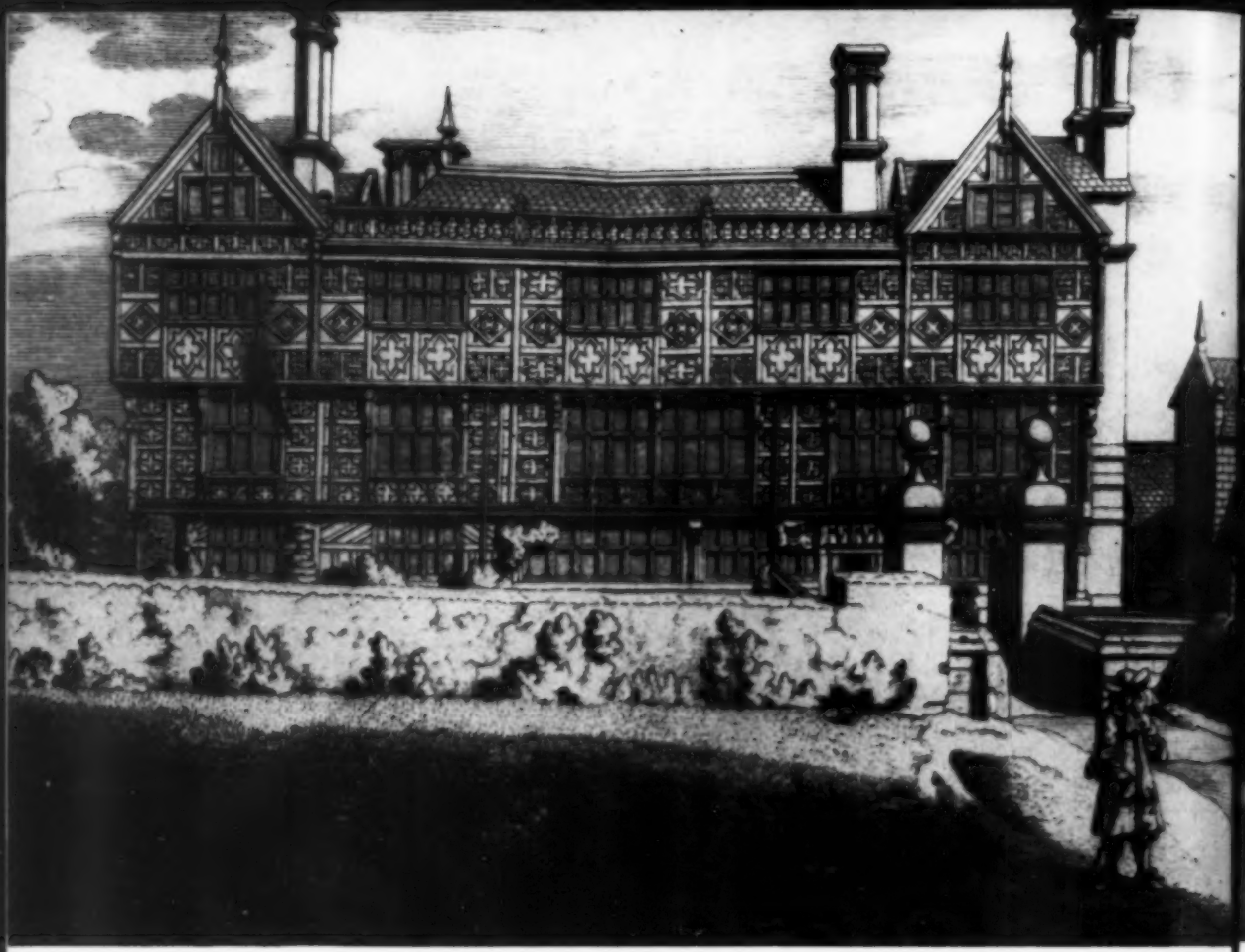
Courtesy G.W.R.

Right:—Wells Cathedral, Somerset. "The West Front of Wells", wrote Thomas Fuller, "is a masterpiece of art indeed, made of imagery in just proportion, so that we may call them vera et spirantia signa. *England affordeth not the like." The mediaeval statuary, with its saints and heroes, prophets and preachers, has been called the great "picture kalendar for unlearned men".*

Courtesy G.W.R.







Top: — Broughton Hall, Staffordshire— as it appeared circa *1686.*

Left:—Horstead Mill, Norfolk

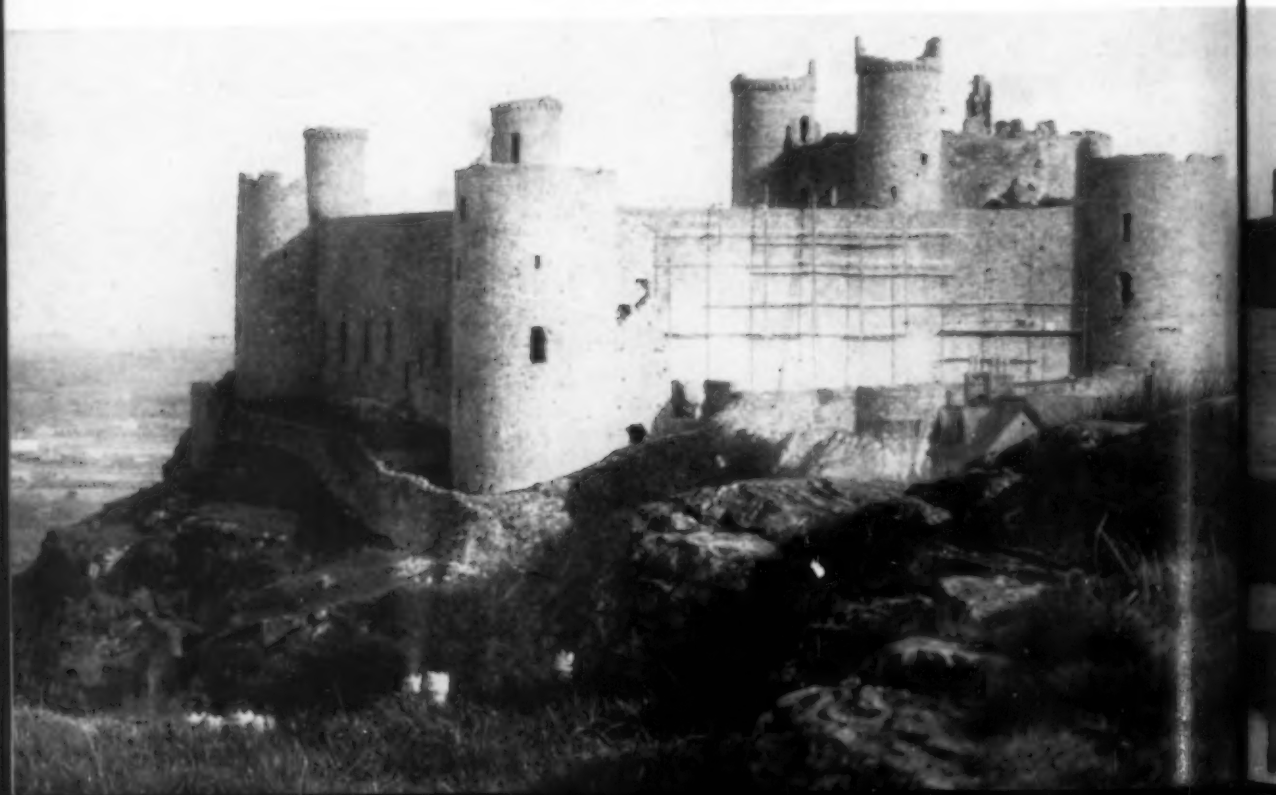
Courtesy L.N.E.R.

Top:—Broughton Hall—as it appears to-day.
Courtesy of *Country Life*

Right:—Flatford Mill, Suffolk (recently acquired by the National Trust). Here Constable, the great painter, used to work.

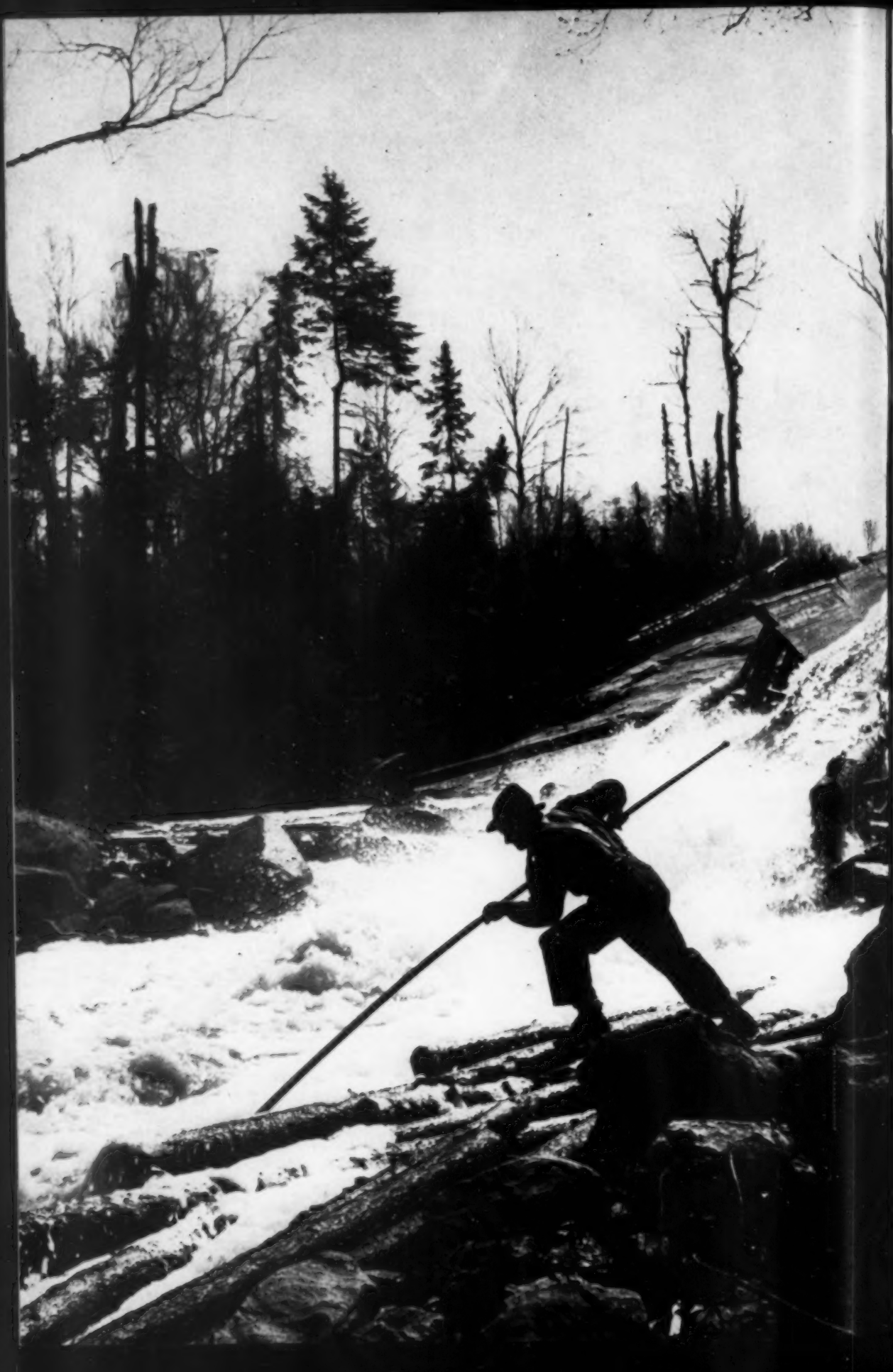
Warwick Castle—as seen from the river.

Harlech Castle, Wales



Bodiam Castle, Sussex

Alnwick Castle, Northumberland



The Canadian Pulp and Paper Industry

by F. T. WEBB

FEW CANADIANS would recognize a pulp or paper mill if they saw one. And still fewer know anything of the industry. But there is hardly a Canadian whose standard of living does not largely depend on the conversion of wood into pulp or paper and its sale at home and abroad.

No matter what yardstick is used, the Canadian pulp and paper industry is one of the major industrial operations in the world; it is, too, by far our largest domestic manufacturing industry.

Of the normal peacetime manufacturing industries of the Dominion, pulp and paper stands first in employment; first in total wages paid; first in the total value of its exports; and first in the amount of capital invested. In the value of its production, the industry has headed the peacetime manufacturing industries of Canada since 1920.

Perhaps because its mills are usually beyond the ken of urban life, it is not recognized that, as in agriculture and in international affairs, in pulp and paper Canada is a world power. Canadian newsprint paper is used by almost all the great daily newspapers in the world; the newsprint capacity of Canada is four times greater than that of any other country. In the production of wood-pulp, Canada is second only to the United States. The rapid and extensive progress of the industry has been one of the chief forces developing the entire economy of the land.

During the past 25 years the demands of the industry have been largely responsible for the widespread development of Canada's hydro-electric resources. To-day it expends annually almost $16 million for power, some $70 million for transportation, close to $22 million for fuel, and some $34 million for purchases of other materials and supplies.

The industry represents an investment of $700 million. Pulp and paper companies employ 37,000 office and mill workers, and another 150,000 are employed in the woods, mainly on a seasonal basis. These employees and their families total about 500,000 people, all of whom depend to some degree on the pulp and paper industry for their livelihoods. Many tens of thousands of other workers and their families in ancillary industries also depend on this industry for their living. For example, take transportation services, for which the industry paid out $70 million in 1943.

Other aspects of the industry also startle the layman. In world trade to-day, Canada's exports of pulp and paper are greater in dollar value than her exports of gold or wheat. The creation of this trade required a capital investment which in 1939 far more than doubled that of the next largest manufacturing industry in Canada.

A notable aspect of the trade's growth, aside altogether from its immense contributions to the public treasury, is the fact that it has been created without subsidies, price floors, or direct financial assistance from governments; single handed it has triumphed in the toughest of tough games, international trade.

The forests are, of course, the foundation and support of the pulp and paper industry, and without them it could not exist. The importance of the forests to Canada, however, extends far beyond the field of pulp and paper. The lumber industry still utilizes more wood in its operations than does the pulp and paper industry. Furthermore, the people of Canada use almost as much wood for fuel as the lumber industry uses in its operations.

In the immediate pre-war years the approximate utilization of wood cut for commercial purposes was 33 per cent for sawlogs,

Left:—Pulpwood, cut in Canadian forests during winter, is floated down fast-flowing streams and rivers to the paper-mills. Canada, the largest producer of newsprint in the world, kept a free press alive in forty countries during the war.

Skid-paths are tricky, narrow and curving. These logs are piled in a "yard" preparatory to hauling to river bank or lake surface.

Unloading on the frozen lake. Sa[illegible]000 timber will float on this[illegible]ake

32 per cent for fuel, 30 per cent for pulp and paper and 5 per cent for miscellaneous needs. Taking less than a third of the cut, the pulp and paper industry converts its wood into products having a value far greater than all other forest products combined. The basic feature in any consideration of the forests, though, is the fact that fire, insects and disease cause a greater annual depletion than any one of these commercial users.

With an investment of some $700 million in mills which cannot operate without pulpwood resources, the industry has a vital interest in the maintenance of the forests and their conservation for future use. Each mill represents a substantial and permanent investment running into millions of dollars. Each mill requires an assured and continuous supply of wood. Mills cannot be moved to tap new timber areas.

Spurred by its responsibility and by self-interest, the pulp and paper industry employs some 200 technically trained foresters whose aim is the scientific management and proper regeneration of the forests. In many areas selective cutting is practiced. By this method, selected trees only are cut, and sufficient protective forest is left to promote maximum reseeding and regrowth by the normal processes of nature. Other cutting methods employed are such as to encourage natural regrowth of the conifers. Everywhere the industry spends substantial sums for protection of the forests from fire and other hazards.

Superficially, cutting wood, grinding it or cooking it into pulp, and then drying and rolling it into paper has none of the characteristics of a war industry. Nevertheless, the industry made an outstanding contribution to the war effort of the Dominion. In the first four years of the war alone, the industry provided Canada with more than 870 million United States dollars, which, in turn, helped substantially to pay for immense purchases of war materials from that country.

Some 12,000 men from this industry, about one-third of the labour force in the mills, served their country in uniform. The industry co-ordinated the production of its machine-shops, trained hundreds of tradesmen, and broke many a bottle-neck in the war production programme. Naval and cargo vessels were outfitted with gun-mounts, winches, steering devices, and many other essential items. Ships were repaired. Alcohol was produced for munitions. Great quantities of pulp were made available for manufacturing

a lake. So 00 cubic feet (or 7,300 cords) of at on this ke when spring comes.

A young woodsman measures off a length on the trunk before sawing. On reaching the mill, logs are cut into smaller lengths by the blades of fast-moving slashers.

nitro-cellulose for explosives and rayon for parachutes, for self-sealing gasoline tanks, and other war purposes. Canadian pulp also went in a vast volume to the United Nations to meet similar direct war needs.

In addition, the output of the industry's peacetime products was expanded to meet the needs of munitions manufacturers. For example, paperboard production during the war was double the average output of the 1930's. In one year alone, Canadian paperboard boxes carried some 4½ million tons of goods from farm and factory to battlefronts abroad and to consumers at home. These boxes saved weight and space aboard ship. By replacing wooden cases, they saved two billion feet of lumber for other urgent needs.

The resources of the Pulp and Paper Research Institute, originated and initially financed by the industry, were placed entirely at the disposal of the Government immediately after war was declared, and in its laboratories were conducted confidential and effective war projects.

Another indication of the important role of the industry and its men in the Canadian industrial scene is provided by the fact that the top war jobs filled by the pulp and paper men included, amongst literally scores of other key posts, that of Deputy Minister for Air, Deputy Minister of Naval Affairs, Chairman of the Wartime Information Board, Director of National Selective Service, and President of the Crown Company which administered the great chemicals and explosives programme of Canada.

A free press in some forty countries was kept alive because the industry, despite its shortage of manpower, increased substantially its newsprint production.

In these and in other ways did the industry fulfil the pledge it made to the government in the early days of war: "The manufacturers are ready, anxious and determined to support the Government of Canada by any means available to them in waging war to the limit of Canada's strength and resources".

Early Beginnings

Paper-making began in Canada in 1803 when a mill was established at St. Andrews, Quebec (then Lower Canada). But it was not until 1866 that wood, instead of rags, was first used in this country as the raw material for paper. Despite its early establishment, and the abundance of raw material within the country, the growth of the industry during the next hundred years was

relatively slow. After the turn of the century, however, its expansion was rapid. The more rapid growth was largely a reflection of the waning pulpwood resources of the United States and the ever-increasing demand there for pulp and paper. But other forces also stimulated the industry.

Prior to 1900, Canada was expanding its exports of pulpwood to the United States. But Canadian sentiment felt increasingly that this raw material should be processed before being exported. Finally, in 1900, the Province of Ontario enacted legislation prohibiting the export of pulpwood cut from Crown Lands; that is, from lands owned by the State. Over the next thirteen years all the other provinces took similar steps. These measures served merely to restrict, but not prohibit, exports. No restrictions were placed on the movement of wood cut on private lands. The legislation did, though, place a definite limit on the amount of wood that could be exported from Canada.

With the rising demand for printing papers, especially newsprint, in the United States, the paper-makers in the northeastern states were already facing a dilemma. Their forest reserves were depleted and increasingly inadequate. In their need, they had turned to Canada for pulpwood. With the export restrictions in effect, the United States manufacturers bought Canadian pulp, which both met their needs and reduced somewhat the strain on their forest resources. As a consequence, Canada's pulp producing facilities expanded rapidly. But even with increased supplies of pulp, the forest assets of the United States were insufficient to permit their paper-makers to keep up with the demand.

Attempting to relieve a situation that was becoming acute, in 1909 the United States lowered the tariff on imported newsprint. This step was inadequate to meet her needs. Finally, in 1913, the tariff was removed altogether. Immediately capital began to flow to Canada for the purpose of establishing newsprint mills. It was recognized that Canada had the requisites for a sound, efficient industry: abundant water-power and vast resources of pulpwood adjacent one to the other, and located reasonably close to what, even then, was the greatest newsprint market in the world.

From 1913 until 1929 the industry steadily expanded; the period of greatest development was from 1920 to 1929. The growth of the industry thus paralleled the phenomenal expansion of the newspaper publishing business in the United States.

In 1913 the newsprint productive capacity of Canada was 350,000 tons per annum; to-day it is 4,300,000 tons. This is more than 40 per cent of the total world capacity. In the thirty years following the turn of the century, Canada grew to be the largest manufacturer and exporter of newsprint in the world. In this period, also, she became one of the world's largest exporters of pulp, but prior to the war was outranked by Scandinavia in foreign pulp markets.

The United States is the main market for Canadian pulp and paper products. In 1939 it consumed 2,194,000 tons of newsprint, of which Canada supplied 63 per cent. In the same year the United States also purchased 600,000 tons of wood-pulp from Canada, as well as 1,500,000 cords of pulpwood. In 1944 the United States took 2,430,000 tons of newsprint, and more than 1,000,000 tons of

Sturdy member of a cruising crew. In uncharted country, far to the north, the compass he carries is essential to his safety.

Noon at a sorting gap finds some workers relaxing while others load their boats with scraps of driftwood from the drive, which they will use as firewood.

pulp, but pulpwood exports were at the same level as in 1939. In that year shipments to the United States were 81 per cent of the Canadian output of newsprint, which, in turn, filled almost 75 per cent of the total United States' supply.

In addition to the more than a million tons of pulp sold to the United States in 1944, 351,000 tons went overseas. Domestic sales were only about 175,000 tons. The remaining output of some 3.6 million tons was retained by mills for their own use for processing into paper, paperboard, and kindred products.

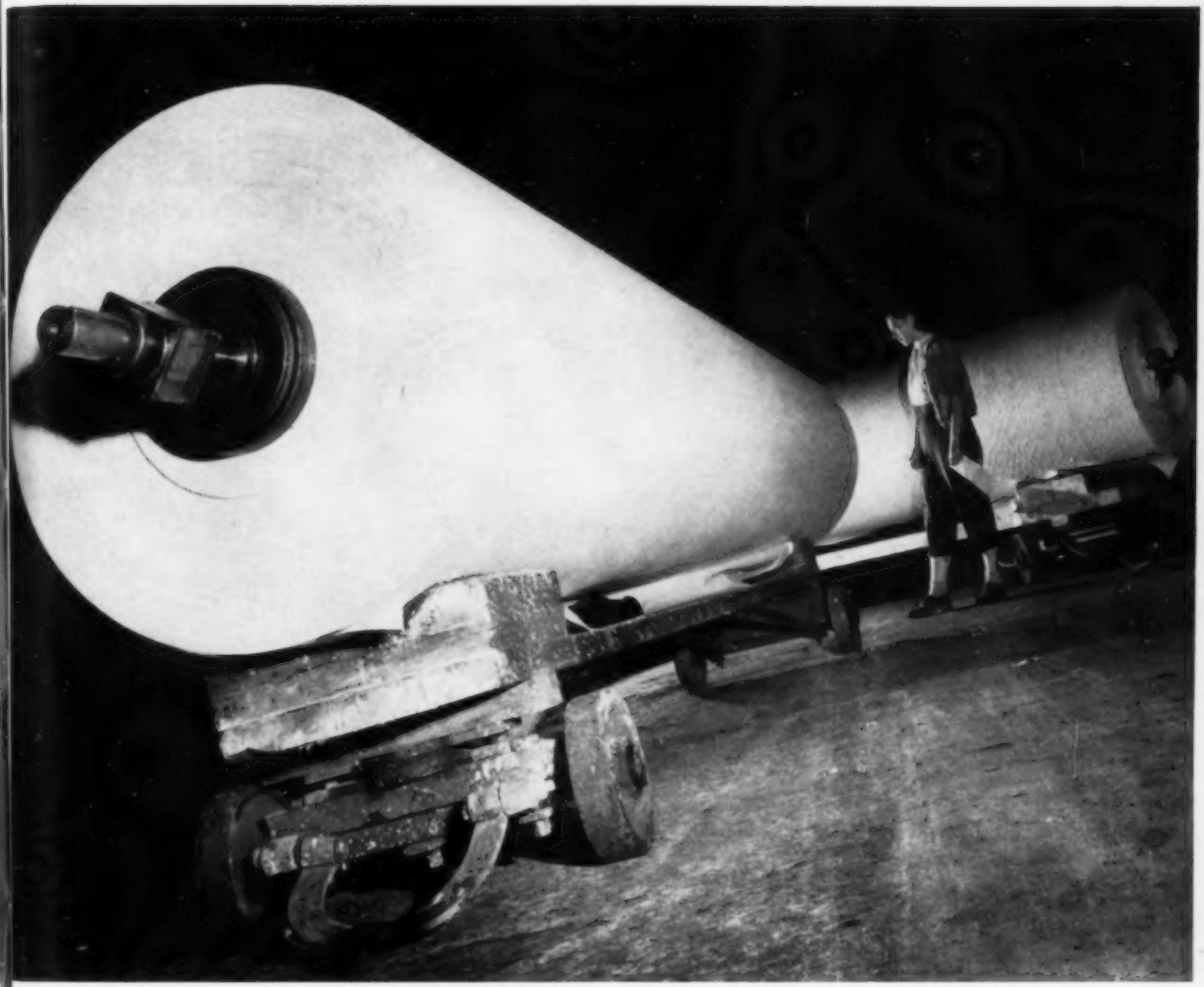
From 1900 to 1929, the Canadian production of papers other than newsprint also

After passing through the barking drums, logs come up the conveyer on their way to the mill. Note the washers at bottom that clean off remaining bits of bark.

expanded; but the pace was slower than with either pulp or newsprint. High tariffs, both in the United States and abroad, have limited the markets of the producers of fine paper, although some tonnage has found its way into Empire and other markets overseas. The miscellaneous paper industry came into being mainly to supply the domestic market. The producers have shown skill and enterprise in developing paper of all types, from cigarette to bank-note paper, to meet Canadian needs.

The fine-paper manufacturers have steadily increased the number of standard and specialty papers which previously were imported. They have developed complete lines of printing, business, stationery, writing, blotting, and coated papers. In addition, they have successfully developed industrial papers for use in the electrical field and in the manufacture of paper containers, paper cups, napkins, towels, and glassine and grease-proof papers for wrapping foods. Altogether, close to 600 varieties of paper are now made in Canada.

Over the past 25 years, the industry has made increasing use of its by-products. Originally, the mills were solely interested in the cellulose fibres contained in wood. The tars, fats, sugars, and rosins present were either burned or dumped into the most convenient sewer or river. Research chemists believe that the potential value of these by-products is immense. As a result, the industry has steadily been developing processes for their utilization.



Rolls of newsprint, just off the giant paper machines. Some machines turn out rolls of this size at the rate of 1,400 feet a minute.

One interesting process was developed in the 1920's, by which vanillin, the essential aromatic of vanilla, is extracted from waste sulphite liquor. This source of vanillin is so great that its further application depends on the future development of a method whereby vanillin may be converted into some other useful material.

Some companies transform the sugars in wood into ethyl alcohol. These same sugars are the media in which yeast is cultured and grown by one Canadian company. Recently one of the fine-paper mills developed a method of isolating lignin, which is the material employed by nature to cement the individual fibres together in wood. The isolated lignin is mixed with fibres and made into sheets on a paper-making machine; the lignin-enriched paper is then subjected to heat and pressure. The result is a strong, tough laminate with many commercial applications. In this instance, the mill simply takes the wood apart and puts it back together again, eliminating some unwanted components, and arriving at a product which is superior to the original wood, at any rate, for certain purposes. The constant research undertaken by paper-mills over the past 25 years is beginning to bear fruit; many new developments are just around the corner. The fundamental research upon which the companies built these developments is centralized in the Pulp and Paper Research Institute, now a joint undertaking sponsored by the industry, the Dominion Government, and McGill University.

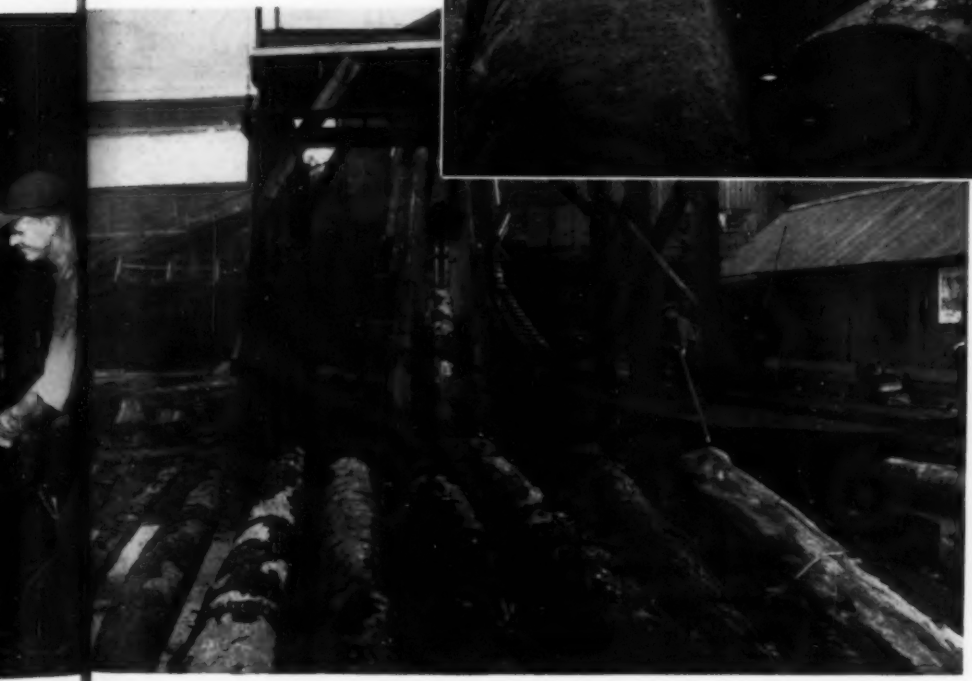
A power-saw mechanic at work in a stand of giant Douglas fir, Vancouver Island.

"Felling" is a skilful occupation—particularly in the case of large trees like this one.

Canada has one hundred and four pulp and paper mills in operation, and of this total eighty-four are located in Ontario and Quebec; of the remainder, seven are in British Columbia, two in Manitoba, six in New Brunswick and five in Nova Scotia. This distribution roughly parallels the extent of the pulpwood resources of each province.

The capacity of all these mills approximates 6,500,000 tons per annum, of which newsprint accounts for nearly 4,300,000 tons. The balance, roughly speaking, is divided equally between pulp for market sale and miscellaneous papers, including paperboard. But these figures do not represent fixed possible capacities. If the situation demanded it, the mills making pulp and converting it into paper could curtail paper production and increase their sales of pulp. Carried to absurdity, Canada's pulp capacity could increase to some 6,500,000 tons, with paper capacity falling to zero. Again, under special circumstances, newsprint machines could produce certain other types of paper. Indeed, some of them did so during the war. But, generally speaking, the mills stick to the types of pulp or paper

Marshalling a fractious trunk into line on a log pond in British Columbia.



Big British Columbia logs are pulled on to the log jack-ladder.

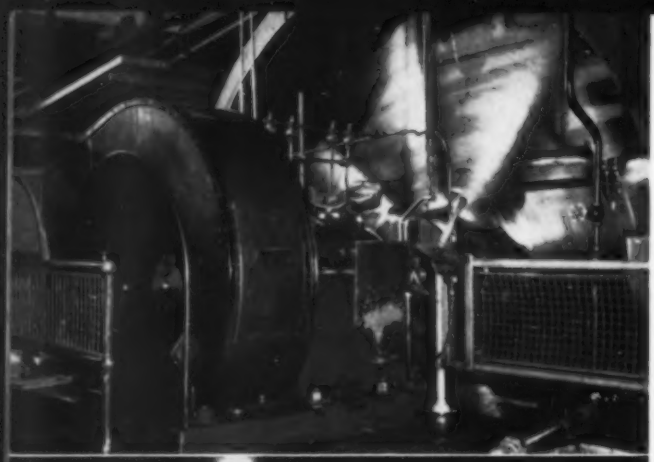
for which their machines were designed.

Exports are the very life-blood of Canada. Our high standard of living, all the comforts Canadians enjoy, depend directly on the maintenance of a high volume of export trade. The increasing contribution which the industry has made to the development of foreign trade is set forth in this tabulation:

CANADA'S EXPORT OF PULP AND PAPER

Average of Five-Year Periods

Period	Newsprint	Other Paper	Wood-pulp	Total Pulp & Paper
1909-1912	Not available	Not available	$ 5,104,000	Not available
1913-1917	" "	" "	13,519,000	" "
1918-1922	$ 59,636,000	$ 8,316,000	44,220,000	$112,172,000
1923-1927	102,572,000	7,567,000	46,855,000	156,994,000
1928-1932	122,708,000	4,883,000	35,406,000	162,997,000
1933-1937	93,947,000	6,188,000	28,898,000	129,033,000
1938-1942	133,417,000	14,963,000	60,165,000	208,545,000



These figures are impressive, especially for a single industry in a country with a population of only about 11½ million people. Great as its contribution is to the Canadian economy, the pulp and paper industry is vulnerable to distant and unexpected forces in its foreign markets, so promptly affected by trade-winds blowing from any part of the world; its far-flung markets, however, should not necessarily all suffer depression at the same time. Because, at times, pulp and paper has accounted for as much as 24 per cent of our total exports, the price of paper abroad is of the utmost importance to Canadians.

The industry contains no dominant group or groups which, in times of stress, or, indeed, at any time, can dictate policies to other producers. Competition is keen and rivalry is intense. There is no industry which is more individualistic, and more rugged, free and enterprising.

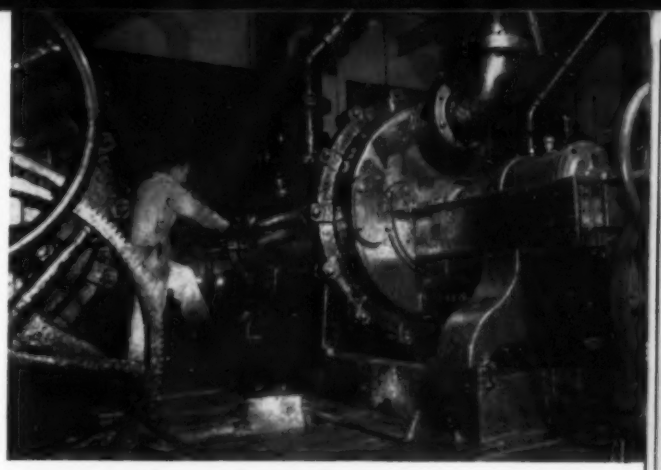
As a result, the great depression of the 1930's produced vicious price-cutting. In those years the effects of the serious situation prevalent in the industry were felt throughout the Dominion. So bad did conditions become that at one time sixty per cent or more of the newsprint industry in Canada was in default of its bond interest.

Between 1930 and 1936 the capital employed in the pulp and paper industry dropped from $704,000,000 to $536,000,000; the bulk of this loss was confined to the newsprint industry. Finally, the provinces of Ontario and Quebec, in which over 80 per cent of the country's newsprint capacity is located, adopted policies designed to force the various companies to operate on the basis of a proportional distribution of the business available. This step helped to stabilize operating conditions and to avert many local tragedies. The closing of mills which were the sole support of whole communities was thereby avoided.

The conditions which brought about this serious state of affairs for Canada could

Top to bottom:—
Main engine drive of a paper machine
A power plant. Some single newsprint mills use more electrical energy than is needed to light Montreal and Toronto.
View of a digester in which chemical kraft pulp is "cooked".

occur again. But it seems unlikely that, even with another severe depression, the industry will again encounter all the problems with which it was beset in the middle 1930's. Capitalizations have been cut, prices have not risen enough to encourage any great expansion, the world demand for paper is rising, forests elsewhere are shrinking, and Canadian producers undoubtedly have learnt some lessons from hard experience.



View of a pulp refiner

Manufacturing Process

Wood is made into paper by first converting it into pulp. Wood bears about the same relation to pulp as the apple does to applesauce; there is a similarity, too, in both converting processes. Two pulping methods are used; one is mechanical and the other involves cooking in chemicals.

The mechanical process produces groundwood pulp, which is exactly what the name implies. Wood is reduced to fibre merely by pressing it against large revolving grindstones. Hence, large quantities of power are required. The yield of groundwood or mechanical pulp approximates to 97 per cent of the weight of the wood.

In the chemical process, small chips of wood, about ¾ of an inch in length, are cooked at a high temperature and under pressure in a chemical liquor. The cooking, requiring several hours, dissolves virtually everything in the wood other than cellulose. The yield of pulp is, therefore, reduced to about 45 to 50 per cent of the weight of the wood.

Three such chemical pulping processes are employed. They produce sulphite, sulphate, or soda pulp, which obtain their names from the acid or alkali employed in the cooking.

Paper is made from pulp which, thinly spread in water, travels on a wide screen at what is known as the wet end of the paper machine. As it moves ahead the water is sucked from the pulp, which then passes over a series of heated revolving drums in the dry end of the machine where the paper emerges, the result, really, of a process of felting and drying the cellulose fibres of the original wood.

The type or mixture of pulp employed determines the character of the paper produced. Newsprint, the paper used in newspapers, is composed of about 85 per cent groundwood and 15 per cent unbleached sulphite pulp.

Bleached sulphite pulp is the raw material from which is made high-grade paper, including book, bond, writing, and tissue. Under the name of dissolving pulp, it is the raw material for rayon, cellophane, photographic film, nitrocellulose, and plastics.

Sulphate or kraft pulp, in its unbleached form, is used to produce wrapping and bag papers, container boards, and other products in which strength is the prime requisite. Bleached, this pulp is used to manufacture white printing and tissue paper, tags, envelopes, and other products in which strength is also essential.

The soda process is largely employed in pulping short-fibred hardwoods, such as poplar. Only small quantities of soda pulp are produced in Canada. It is usually mixed with sulphite pulp and with it goes into the production of high-grade book and printing paper.

The raw material of paperboard may include anything from waste paper and pulp screenings (the pulp rejected for paper manufacture) to the finest grades of chemical pulp. Its components vary with the quality and type desired.

Next to newsprint, the paperboard mills are the largest producers in the industry. In 1944, the total value of paper production was $256 million. Of this figure newsprint accounted for $165 million, board and building board for $39 million, wrapping paper for $17 million, and all other papers for $34 million.

This production all flows from logging operations, which in eastern Canada begin late in August and continue through the winter months. The pulpwood for the mills is cut in the forests and piled on the banks of streams. When the melting snow and ice create the spring freshets, the logs are floated from forest to mill. The bulk of the wood reaches the mill in the same year as it starts on it way; but in some remote areas it takes two or three years. Where wood is cut above the height-of-land, or where streams cannot move the wood, logging railroads have been built. But in the east this type of operation is, as yet, rare. In the Lake Superior area the wood is often floated or carried down to the lake and then towed to the mill.

In the vast majority of instances wood is floated from the forest to the mill and lumbermen handle the driving operations. On streams utilized by more than one company, dams and other facilities to speed the log movement are built and joint or co-operative driving operations are conducted. Each owner has his own mark placed on the timber cut on his lands; thus the logs can later be sorted and delivered to the owners.

West of the Rockies, because there are but few drivable streams, the logs are assembled by cable systems and transported to the mills or to water by logging railway, truck, or tractor. On the west coast logging operations are carried on more or less throughout the year, whereas in the east they are seasonal.

Canada's total forest areas are officially calculated to be 1,220,000 square miles, of which some 770,000 square miles are considered to be productive; of this figure, some 430,000 miles are presently accessible. The unproductive forests are not lost to the economy; they perform the useful task of protecting the watersheds by retention of moisture.

The most recent estimates available place the total Canadian stand of merchantable timber on the accessible lands at 239,000 million cubic feet, of which 174,000 million

Top to bottom:—
Children leave school at the paper-mill town of Ocean Falls, British Columbia.
Modern substitute for the old swimming-hole in a British Columbia mill town
Street scene in a paper-mill town

cubic feet consist of the conifers and 65,000 million cubic feet of the broad-leaved trees. Of the conifers, 36 per cent are located in Quebec; 24 per cent in Ontario; 26 per cent in British Columbia; 6 per cent in Alberta; and 4 per cent in New Brunswick, the balance being more or less evenly spread among the remaining provinces. Since conifers provide virtually all the pulp made in Canada, the industry is largely concentrated in the provinces of Ontario and Quebec.

No adequate or complete survey of the annual increment of Canadian forests has ever been compiled. That heavy but admirable bit of prose, *The Canada Year Book*, points out that the average annual depletion of the accessible productive forests during the 1933-42 period amounted to 14 cubic feet per acre; and that, while there may be a small growth in many areas, over considerable tracts the Dominion Forest Service has recorded growths of from 25 to 40 cubic feet per acre. It is known, too, that Scandinavian forests produce 28 cubic feet an acre.

From the facts available, informed opinion agrees that the forests can support in perpetuity the present demands made on them, but that the time has come for the development of policies which, through conservation and a major reduction in the fire, insect and disease hazards, will permit the forest harvests of to-morrow to be a source of increasing national income.

It is impossible to summarize all the factors affecting the future utilization of the forests, but some important features of the situation may be summarized as follows:—

The forests are not merely a source of public revenue; they are also a public responsibility demanding adequate expenditures for their maintenance. Otherwise, the nation is living on its capital.

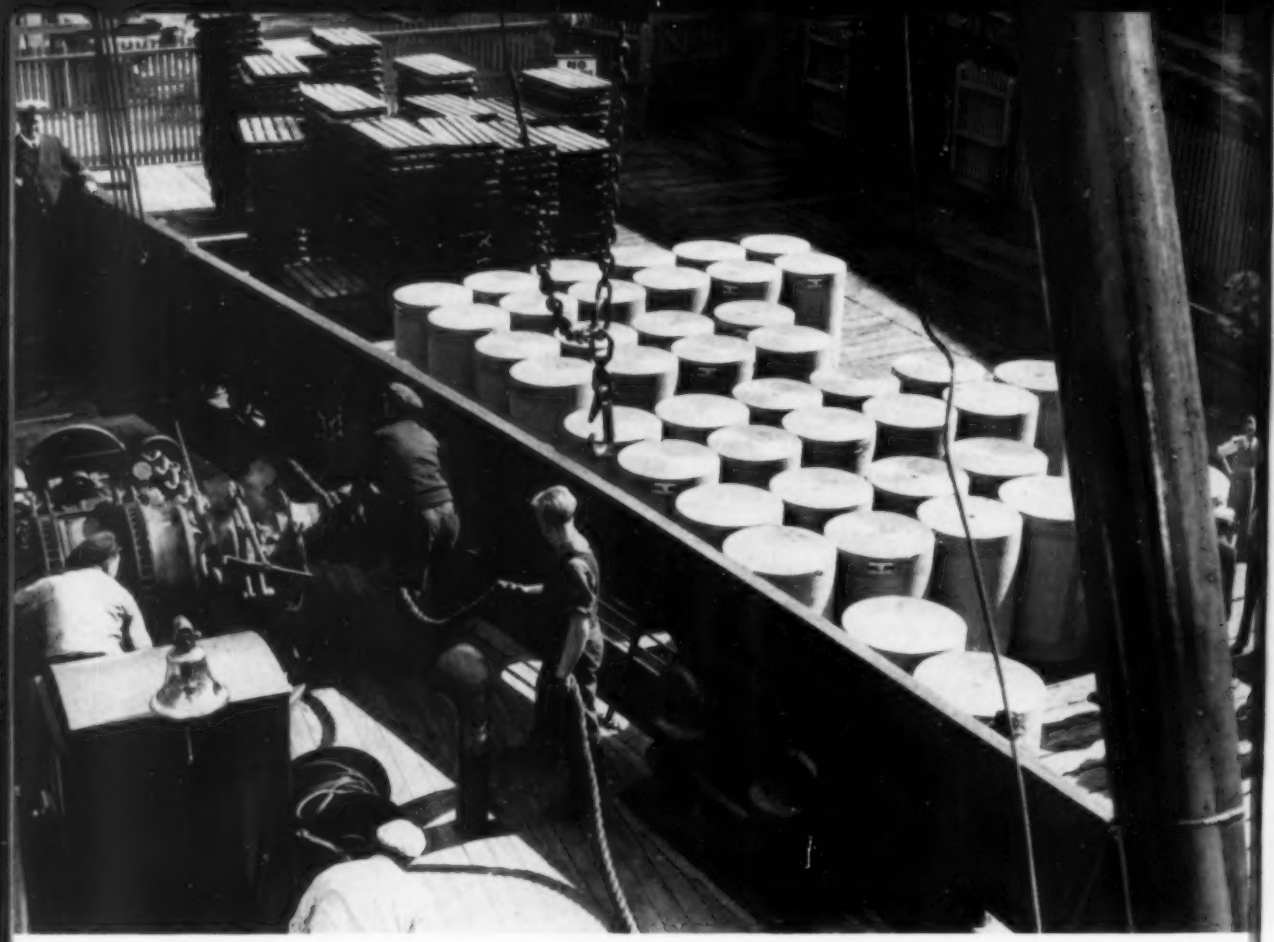
The products of the Canadian forests are sold chiefly in world markets in competition

Top to bottom:—

Romeo Clement of Farley, Quebec, supplies an evening's entertainment in the bunk-house.

Relaxation and mouth-organ music before bedding down for the night.

Father Meilleur and Provincial Government Sanitary Inspector J. A. LePage have a friendly chat before Sunday-evening service in the cookhouse.



Paper is loaded into a steamer for shipment to the presses of the world.

with countries which maintain forest and other services that give producers abroad a better competitive position in world markets.

If foreign markets for the forest industries are to be held and extended, then domestic forest policies must be such that forest operations in Canada can be conducted on the low-cost basis necessary to meet competition in foreign markets.

There is no public realization of the necessity for providing means of transportation and extraction in the forest. With agriculture and mining, the provision of such facilities is taken for granted. Permanent forest roadways would greatly facilitate protective measures of all types.

It is wasteful to permit agriculture in areas where trees are the only crop suited to the soil conditions.

Lands basically suited only to the production of forest crops have been, and continue to be, alienated from the Crown. Such lands converted to agriculture deplete the forest resources and, at best, provide but a submarginal livelihood for the owner.

Many of the present methods of land and forest tenure tend to reduce, rather than encourage, expenditures on forest-management.

Affecting the future of our forests is the fact that the marked growth in world consumption of pulp or paper does not appear to have ended. Many new uses for both pulp and paper were developed during the war. Several of them will be expanded in the years ahead. Increased literacy and higher standards of living for hundreds of millions of people must come, even though slowly; an increasing demand for pulp and paper is a concomitant in such progress.

Canada is probably in a better position than any other country to meet additional demands that may develop. She has accessible forest resources which are not only

sufficient to meet the needs of her mills in perpetuity, but which, given an adequate national forest policy, would also permit substantial expansion in the future.

It is believed that the Scandinavian countries are cutting to the limit of their annual growth. Virtually no additional large-scale expansion can take place in the United States. Under present conditions Alaskan wood can largely be classed with that in Canada's inaccessible forests.

The two other great forest countries, Brazil and Russia, may, in due course, become factors in the world's pulp and paper markets. While Brazil is in the early stages of an industrial development, the quality of the wood in her forests may not lend itself to the production of pulp and paper suited to world markets. Russia is known to have pulp and paper plans, but she has her own growing domestic needs to meet, and she lacks the combination of resources that created the Canadian industry; namely, abundant conifers set in a network of streams which at one and the same time provide the enormous amount of power required in the mills and carry the logs to mill sites where low-cost transport to adjacent markets is available.

Undoubtedly, Canada will be called upon to meet any immediate increase that may occur in world demand for pulp and paper. The probabilities are that whatever expansion she may have to undertake will be largely in the pulp rather than the paper field. Indeed, two large United States paper companies have just completed plans for the development of pulp projects in Northern Ontario.

Canada's newsprint industry seemed overbuilt to the extent of perhaps a million tons of annual capacity at the outbreak of war. To-day the demand exceeds the supply. As soon as larger wood supplies are obtainable, the newsprint industry, now operating at 80 per cent of capacity, may well expand its production.

When the United States entered into the war, that country had a newsprint capacity of approximately 1,000,000 tons a year. To-day the mills are producing at the rate of only 730,000 tons annually. It is believed that by 1948 the United States output will probably drop to some 600,000 tons. In the northern United States, pulpwood costs are higher than those in Canada. Over the last twenty years, United States mills in this section of the country have largely been converted to the making of finer papers, in the production of which pulpwood plays a relatively smaller role. In short, the market in which Canada sells some 80 per cent of her newsprint, and some 65 per cent of her pulp manufactured for sale, is expanding.

If future Canadian mill construction and the possible entry of other countries into the world's pulp and paper markets are timed so that they coincide with an upward trend in the demand for pulp and paper, then the Canadian industry should continue increasingly to benefit the entire economy of the Dominion. But the pulp and paper industry seems to be peculiarly susceptible to over-development. With newsprint in Canada and kraft paper in the southern United States, it took years for the demand to catch up with over-expansion of the industry. Because Canadian newsprint and pulp are made largely for export and are exposed to world competition, any over-expansion in the industry would again produce at least some of the difficulties which darkened the 1930's—hardships which blighted the life of whole communities and, indeed, touched all Canadians and shook the foundations of our entire economy.

Thus, every Canadian, no matter how remote from the forests, has a direct and vital interest in the maintenance and development of national and other policies which will permit the conservation of Canada's forests, augment and assure their perpetual yield, and increase the sale of their products in the markets of the world. To-day these products make Canada an industrial world power. To-morrow, they can augment our trade, raise our standard of living, increase our population, and stimulate a development that will provide wider opportunities for our people and add stature to our nation.

Franklin Cenotaph on Beechey Island

The Fate of Sir John Franklin

by W. Q. KETCHUM

How one hundred and five men, the flower of the British Isles and the pick of the Royal Navy, disappeared in their search for the Northwest Passage is a secret that is still locked in the icy recesses of the Far North. A century has passed since Captain Sir John Franklin set forth on his third and last voyage to the Arctic in high hopes of mastering the Northwest Passage—an ambition that had disturbed the dreams of British navigators even in the spacious days of their great Queen Elizabeth. These sturdy mariners believed that the sought-after passage was the direct route to the fabled riches of Cathay.

The fate of Franklin and his gallant officers and men has not been forgotten. This summer the Canadian Government is commemorating the 100th anniversary of their voyage, and a large wreath is being placed as near Beechey Island as ice conditions permit; it will include fifteen roses with thistles, shamrocks and leeks, on a background of lycopodium.*

In 1927, the writer, through a rare stroke of luck, landed on Beechey Island and viewed the mouldering remains of the Franklin starvation camp and the Franklin cenotaph, at the foot of which he placed a record after retrieving one left there many years before by Captain Elzear Bernier. George P. Mackenzie of Ottawa, former Gold Commissioner of the Yukon, was in command of the annual Canadian Government expedition that year. It was on his instructions that the records were exchanged. A copy of the old record was added.

On the occasion of the Franklin centenary it is fitting that the history of his ill-fated expedition should be briefly reviewed.

Franklin and his two Royal Navy ships, the *Erebus* and *Terror*, of 370 and 240 tons respectively, set forth on a quest that was to end in disaster and death. The two vessels were considered adequate to their task. They were excellently officered and manned. They set sail with every advantage that human skill, bravery and experience could superadd to material equipment. The last glimpse of the ships was obtained twelve days after their departure from their anchorage in Disco Bay, North Greenland. (Many Canadians have been at Disco and enjoyed the hospitality of the Danes there.)

A whaling ship in contact with Franklin probably took aboard some last-minute letters for the British Isles. The following was entered in the log of the whaler: "Melville Bay, July 26, 1845, at 8 p.m. received on board 10 of the chief officers of the expedition under the command of Captain Sir John Franklin of the *Terror* and *Erebus*. Both ships' crews are all well and in remarkable spirits, expecting the finish of the operation in good time. They are made fast to a large iceberg with a temporary observatory upon it. They were in latitude 74 degrees, 48 minutes; longitude 66 degrees, 13 minutes West." This was to be the last time Sir John and his men were in touch with the outside world.

What makes the riddle of Franklin's expedition particularly baffling is that only one record has been found that throws any light on subsequent movements. Yet he had earnestly enjoined all his officers and men to record in writing anything they saw, however trivial.

The record alluded to was found by Lieutenant Hobson of the Royal Navy at Victory

* The Eastern Arctic Patrol on board the R. M. S. *Nascopie* when in the vicinity of Lancaster Sound held a brief but impressive ceremony on September 4, 1945, in commemoration of the Franklin expedition. The passengers and crew were assembled on deck, the ship was stopped, the flag lowered, and, at the conclusion of the ceremony, Captain T. F. Smellie, O. B. E., Master of the *Nascopie*, deposited a wreath overboard. (This article was written early in the summer of 1945.)

Point on the northwest coast of King William Island. The important and exciting news it communicated was written round the margin of a printed form, which in those days was usually supplied to ships with the object of being enclosed in bottles and thrown overboard in various localities for the purpose of ascertaining the set and general drift of oceanic currents. They were generally called "bottle-papers" and were printed in six different languages, each conveying a request that any person finding the paper forward it to the Secretary of the Admiralty, noting the date when and place where it was picked up.

The marginal notations that revealed the sad fate of the expedition were written and signed by Captains Crozier and Fitzjames, the greater part being in the handwriting of the latter. The printed document had originally been deposited in the cairn by Lieutenant Graham Gore in the spring of 1847 when all was well with the expedition and they had every prospect of bringing their labours to a successful termination. Crozier and Fitzjames have a different story to tell:

> "April 25, 1848.—H.M. ships *Terror* and *Erebus* were deserted on the 22nd of April, five leagues N.N.W. of this, having been beset since 12th September, 1846. The officers and crews, consisting of 105 souls under command of Captain F. R. M. Crozier, landed here in latitude 69 degrees, 37 minutes, 42 seconds, N., longitude 98 degrees, 48 minutes W. A paper was found by Lieutenant Irving under the cairn supposed to have been built by Sir James Ross in 1831, 4 miles to the northward, where it had been deposited by the late Commander Gore in June, 1847. Sir James Ross' pillar has not, however, been found, and the paper has been transferred to this position, which is that in which Sir James Ross' pillar was erected. Sir John Franklin died on the 11th June, 1847, and the total loss by deaths in the expedition has been to this date 9 officers and 15 men. Start on tomorrow, 26th, for Back's Fish River."

This record, together with fragmentary and inadequate testimony given by Eskimo, obtained years after the fate of the last member of the party had been sealed in the white sepulchre of the North, are all that the world has discovered of the last days of the members of the expedition.

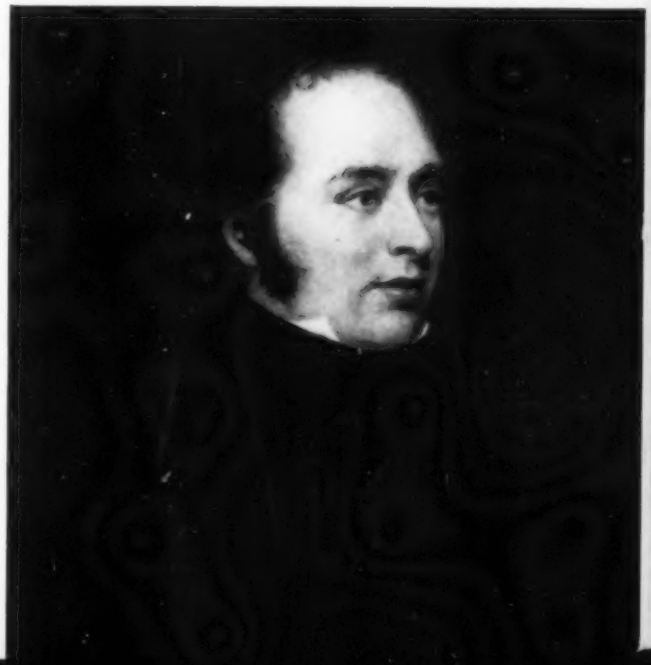
The disappearance of Franklin and his men was the mainspring of a thorough search, and led to the mapping of thousands of miles of Arctic coastline by British and American expeditions.

Lady Franklin devoted a large fortune and the remaining years of her life attempting to ascertain the fate of her husband. The collaboration she received from the Arctic brotherhood was immense. One of its stanchest members was Admiral Sir Francis Leopold M'Clintock. He took part in a number of intensive search parties and was captain of the *Fox* in a voyage to Somerset and Prince of Wales Islands, Boothia Peninsula and King William Island, 1857-59, when he discovered the fate of Franklin and the officers and crews of the *Erebus* and *Terror*.

One thing stands clear amidst the mass of conjecture pertaining to the Franklin expedition—there is no gainsaying that until the end the officers and ratings of the Royal Navy lived up to the high traditions of the Senior Service.

It has been observed by Sir Clements Markham* that the record signed by Captain F. R. M. Crozier reveals the man. "It is concise, clear and to the point. There is the

Sir John Franklin—from a portrait by Thomas Phillips, R. A.
Courtesy of the National Gallery of Canada



*See his *Life of Admiral Sir Leopold M'Clintock*

close attention to detail in the notation of Captain Fitzjames. There is no word of complaint or of anxiety: calm, dignified, laconic as became the leader of dying heroes, he thus guided the last pen he was ever destined to hold.

"Round the cairn were strewn shovels, iron hoops, a large single block, four sets of boat's cooking stoves, a medicine chest, a sextant, a dip circle and a great heap of clothes. This would indicate that the weights on leaving the ships were soon found to be too great. In their last effort to escape the hours of doom the survivors divested themselves of all superfluities."

It is believed that the awful disaster that overtook the Franklin expedition was due first to erroneous charts and secondly to bad provisions.

"If the *Erebus* and *Terror* had hugged the east coast of Boothia they would have made the north-west passage", according to Admiral Markham. "But the chart of those days made King William Land a peninsula of Boothia. There was, therefore, no alternative but to attempt a passage round the west coast of King William Island, where they were beset in that impenetrable pack from which there was no possibility of escape. This was the first and primary cause of the disaster. The second cause which involved the death of every soul on board both ships was the supply of bad provisions. The Admiralty made a contract with a man named Goldner, whose rascality was not found out until after the expedition sailed. The great pile of condemned tins at Beechey Island told the sad story. Decimated by scurvy on board, with the seeds of scurvy in all the survivors, they were forced by starvation to make their last attempt for life in the month of April, when there is no game, instead of in August, when game is abundant."

Dr. John Rae, surgeon and explorer in the service of The Hudson's Bay Company, in 1853-1854 made a boat voyage to the coasts of Boothia Isthmus. He secured from the Eskimo personal belongings of Franklin and his officers and brought to civilization a macabre tale of the last days of the expedition. A reward of £10,000 was given to Dr. Rae for his exertions and discoveries.

With radio and the aeroplane the Franklin tragedy would be to-day almost out of the question. In the Arctic, where men of Britain and America then gambled with death in tiny sailing ships, the terrors of the ice, though still present, have now been greatly minimized. And not so long ago a tiny vessel of the Royal Canadian Mounted Police, the *St. Roch*, completed a two-way journey through the Northwest Passage.

It is as pioneers in the vanguard of the long annals of discovery that this year Sir John Franklin and his devoted band are to be honored by the Canadian Government.

The rose of England, the thistle of Scotland, the shamrock of Ireland, the leek of Wales are on the wreath which will be picked up at Fort Churchill by the R.M.S. *Nascopie*.

Defying wind and weather and the passage of time, the cenotaph at Beechey contains this inscription:

TO THE MEMORY OF
FRANKLIN,
CROZIER, FITZJAMES,
and all their
gallant brother officers and faithful companions
who have suffered and perished
in the cause of science and the services
of their country
THIS TABLET
is erected near the spot where they passed
their first Arctic winter and whence they
issued forth to conquer difficulties or
TO DIE
To commemorate the grief of their admiring countrymen
and friends, and the anguish, subdued by faith,
of her who has lost, in the heroic leader of the
expedition, the most devoted and
affectionate of husbands.

* * *

"And so He bringeth them unto the
haven where they would be."
1855

There are many Franklin memorials. His bust was placed in Westminster Abbey, and on it are engraved the following lines by Tennyson, a nephew by marriage:

"Not here! the white North hath thy bones,
and thou,
Heroic sailor soul,
Art passing on thy happier voyage now
Towards no earthly pole."

H. M. S. Ships Erebus and Terror

28 of May 184 { Wintered in the Ice in Lat. 70° 5′ N Long. 98° 23′ W

Having wintered in 1846 — 7 at Beechey Island in Lat 74° 43′ 28″ N. Long 91° 39′ 15″ W After having ascended Wellington Channel to Lat 77° and returned by the West side of Cornwallis Island

Commander.

Sir John Franklin commanding the Expedition.

All well

WHOEVER finds this paper is requested to forward it to the Secretary of the Admiralty, London, *with a note of the time and place at which it was found:* or, if more convenient, to deliver it for that purpose to the British Consul at the nearest Port.

QUINCONQUE trouvera ce papier est prié d'y marquer le tems et lieu ou il l'aura trouvé, et de le faire parvenir au plutot au Secretaire de l'Amirauté Britannique à Londres.

CUALQUIERA que hallare este Papel, se le suplica de enviarlo al Secretario del Almirantazgo, en Londrés, con una nota del tiempo y del lugar en donde se halló.

EEN ieder die dit Papier mogt vinden, wordt hiermede verzogt, om hetzelve, ten spoedigste, te willen zenden aan den Heer Minister van de Marine der Nederlanden in 's Gravenhage, of wel aan den Secretaris der Britsche Admiraliteit, te London, en daar by te voegen eene Nota inhoudende de tyd en de plaats alwaar dit Papier is gevonden geworden.

FINDEREN af dette Papiir ombedes, naar Leilighed gives, at sende samme til Admiralitets Secretairen i London, eller noermeste Embedsmand i Danmark, Norge, eller Sverrig. Tiden og Stoedit hvor dette er fundet önskes venskabeligt paategnet.

WER diesen Zettel findet, wird hier-durch ersucht denselben an den Secretair des Admiralitets in London, einzusenden, mit gefälliger angabe an welchen ort und zu welcher zeit er gefundet worden ist.

Party consisting of 2 Officers and 6 Men left the Ships on Monday 24th May 184

G. M. Gore Lieut

Chas F. Des Vaeux Mate.

London: John Murray, Albemarle Street. 1849.

J.S. Inglis & Son, Printers, Edin.

Only record ever found of the Franklin expedition.

Gateway to a New World

Report on the United Nations Food and Agriculture Organization (FAO) Conference, Quebec City

by LAURA BEATTIE

FOR FOUR CENTURIES travellers seeking the freedom and promise of a new world have felt their hearts lighten and their hopes rise as they approach the narrowing of the St. Lawrence where stands the City of Quebec—gateway to a new world.

In this ancient city the leaders of the United Nations gathered to plot the course that brought World War II to a successful

Above:—This general view of the United Nations Food and Agriculture Organization Conference in Quebec City was taken in the ballroom of the Château Frontenac, location of plenary sessions. Delegation chairmen sit at the long lines of tables down the centre, with the members of their respective delegations immediately behind them.

Left:—Sir John Boyd Orr, famed Scots nutritionist, scholar and farmer, who was elected unanimously to the post of Director General of the United Nations Food and Agriculture Organization. Sir John is a Member of Parliament for the Scottish Universities and Rector of the University of Glasgow.

conclusion. It was peculiarly fitting, therefore, that Quebec should be the site of the first meeting of the first of the new, permanent United Nations groups, the Food and Agriculture Organization—an organization concerned with welfare instead of warfare, an organization dedicated to the achievement of freedom from want of food for all peoples, together with a higher standard of living for those who work to reap the products of earth, sea and forest.

The Food and Agriculture Organization hopes to achieve these aims through the exchange of information among member nations. It will supply, on request, missions of scientific and technical experts to carry out on-the-spot surveys. It will represent the interests of producers and consumers on other international bodies. It will, with the co-operation of governments, conduct surveys and studies on a world-wide basis; two at least are definitely projected for the near future. The first, a quick world survey of food supplies and consumption, will facilitate the adjustment of food production to human needs. The second project is a world census of agriculture, forestry and fisheries and their products, which, it is hoped, may be under way by 1950.

Despite the fact that the production of food occupies about two-thirds of the world's people, the world is still haunted by hunger, and a large proportion of the men and women engaged in this important work have standards of living far below the minimum for decency. In the economically undeveloped countries (some forty out of the sixty separated nations, inhabited by 1,500 million of the world's 2,100 million people) malnutrition, with its consequent ill health and premature death, affects at least 75 per cent of the population. Even in the economically advanced countries like Canada and the United States, estimates of the number of people who do not get enough of the foods needed for health run between 20 and 30 per cent of the total population.

To date, despite recent enormous advances in scientific knowledge and technical skills, mankind has made but little progress towards solving the fundamental problem of world hunger. However, wartime experiences in countries such as Britain, whose food economy had to be drastically overhauled if she was to survive, have proved how much can be accomplished even under adverse circumstances.

In accepting membership in FAO through the act of signing its constitution, the governments of the member nations pledged themselves as: "being determined to promote the common welfare by furthering separate and collective action on their part for the purposes of:—raising levels of nutrition and standards of living of the peoples under their respective jurisdiction, securing improvements in the efficiency of the production and distribution of all food and agricultural products, bettering the condition of rural populations, and thus contributing to an expanding world economy".

The misty sunshine of an Indian summer afternoon slanted through the tall windows of the Chateau Frontenac's ballroom as, one by one, the delegates affixed their signatures to the constitution in the ceremony which brought the Food and Agriculture Organization into being. Speaking of this ceremony, Sir John Orr, later appointed Director General of the Organization, said: "I feel sure that two or three hundred years from now historians will look on this afternoon, October 16, 1945, as marking the beginning of a new era in human history."

Representatives of thirty nations signed that first day: Australia, Belgium, Canada, China, Czechoslovakia, Denmark, Dominican Republic, Egypt, France, Greece, Guatemala, Haiti, Honduras, Iceland, India, Iraq, Liberia, Luxembourg, Mexico, Netherlands, New Zealand, Nicaragua, Norway, Panama, Peru, Philippine Commonwealth,

Canada's Ambassador to the United States, Hon. L. B. Pearson, who presided as Chairman of the Food and Agriculture Conference and Interim Commission.

Union of South Africa, United Kingdom, United States and Venezuela. Before the conference closed, representatives of Brazil, Colombia, Iran, Lebanon, Poland and Syria had added their signatures, and notices of acceptance had been received from Bolivia, Chile, Ecuador, Paraguay, Uruguay, and Yugoslavia.

The chief disappointment of the conference was the failure of the U.S.S.R. to sign. They had a large delegation present, headed by Vassily Sergeev, Foreign Trade Commissar, whose members had been prominent in the work of the Interim Commission, and took part in the conference meetings in their role of observers. Towards the end of the session, the conference chairman read a statement which said, in part:

"This morning I had a conversation with the Head of the Soviet Delegation. He assured me that his Government has the same objectives and sets for itself the same tasks as FAO, that it endorses the idea of international co-operation for the improvement of agricultural production and the bettering of the food situation of the United Nations.

"The Government of the U.S.S.R. feels, however, that the organizational forms of FAO still require study. It has also become necessary for the Soviet Union to consult those of its Republics which are large producers of agricultural products and agricultural raw materials.

"For these reasons, the U.S.S.R. is abstaining from becoming a member of FAO at this time, and its representatives will continue to attend the first session of FAO only as observers."

The conference lost no time in getting down to work, under the able and diplomatic chairmanship of L. B. Pearson, Canada's Ambassador to the United States, who, before the conference was half begun, was known to everyone present as "Mike".

The functions of FAO in relation to the objectives set forth in the preamble to the constitution had been given in general terms in the final Act of the Hot Springs Conference on Food and Agriculture, called by President Roosevelt in 1943, and again, in greater detail, in the various reports of the Interim Commission. It had been agreed, prior to the Quebec conference, that FAO should collect and disseminate information, should, when requested, be prepared to advise governments and supply missions of technical and scientific experts, should make studies and recommend action to governments and other international organizations. The business of the delegates who met in Quebec was to decide *what* information, *what* studies and *what* recommendations.

Two Commissions were set up. Commission A, under the chairmanship of the head of the South African Delegation, the Hon. O. R. Viljoen, was assigned the task of preparing a programme of work and policy for the guidance of the Director General. Commission B, under Chairman Henrik Kauffman, Danish Minister to the United States and Denmark's member of the conference, was given the task of solving problems of organization and administration and of defining the relations between FAO and the United Nations and other international bodies.

Six committees, dealing respectively with nutrition and food management, agricultural production, fisheries, forestry, marketing and statistics, were set up under Commission A. In the early stages of their work, it appeared as though countries might line up in two blocs—the producing or exporting countries versus the consuming or importing countries. As discussions proceeded, however, the fundamental identity of interests of these two groups became apparent and, with some concessions given by all, unanimity of agreement was achieved on all final recommendations.

That an agricultural policy based on human need calls for tremendous increases in the production of many foodstuffs, particularly dairy products, livestock, fruits and vegetables, was not disputed by any of the delegates, but the fear of creating surpluses for which there would be no effective demand was very evident in early discussions.

The importance of international collaboration with respect to commodity trade agreements, particularly regarding commod-

The Agricultural Committee of FAO

ities such as wheat, cotton and wool, which may be expected to become surplus in relation to effective demand within the near future, was continually stressed.

The development of the liaison functions of FAO with respect to other international organizations, particularly those dealing with credits, trade and commodity agreements, was placed before the Director General as a matter of high priority.

The necessity of maintaining employment at high levels, already adopted by the majority of governments as a part of their national policy, was repeatedly stressed, as was the need for greater industrialization, particularly in the less developed countries.

As agricultural production becomes more efficient, fewer people can produce more foods, there is less subsistence farming, new rural markets open up for industrial goods and services, and more people are freed to provide those goods and services.

Ultimate reorientation of world agriculture so that each country concentrates on those products which it can most economically and efficiently produce is a vital long-term objective of FAO.

The report, including recommendations, of the committees comprising Commission A runs to some 15,000 words and embraces a programme which may take a generation to become fully operative, though there is much that can be done immediately in the way of wide application of existing knowledge and techniques which will be quickly reflected in improved food supplies and better rural living. It is the task of the Director General, assisted by his fifteen-man executive committee and a staff of international experts, yet to be recruited, to turn this blueprint into a building.

Who is the man on whom such heavy responsibility has fallen? A native of Scotland, he is truly a citizen of the world, for

Canada was among the thirty nations signing the constitution of the United Nations Food and Agriculture Organization. Canadian Minister of Agriculture, Hon. James G. Gardiner, is seen here signing for the Dominion, with Walter E. Sharp, Secretary-General of the conference, presiding at the signing.

throughout a long and distinguished career Sir John Boyd Orr, unanimously chosen to direct the work of FAO during its first two years, has been a vigorous and outspoken champion of those objectives for which FAO stands. Internationally famous as a nutritionist, scientist, and great humanitarian, Sir John is also a practical farmer, represents the Scottish Universities in the British House of Commons and is Rector of Glasgow University. Though 65 years old, he is full of vigour and has the ideals usually associated with men many years his junior.

Fully aware of the difficulties which face any world organization, Sir John is nevertheless confident that the objectives of FAO can be achieved. To quote his own words: "I am almost tempted to say that if this organization succeeds it will perform a miracle. We performed many of them during the war...The vision we have of a new world which FAO can begin to build must inspire us with the faith, confidence and hope which will enable us to overcome, one by one, the difficulties we find."

FAO can advise, but cannot coerce its member governments. Its success or failure will, in the last analysis, depend on national action on the part of its member countries and the use governments make of the facilities provided by FAO. L. B. Pearson emphasized this point in his final assessment of the achievements of the conference:

"FAO is, in the last analysis, people and governments. So it remains for us to make

The Fisheries Committee of FAO

Informal discussions of international matters brought old friends together and developed many new friendships during the United Nations FAO Conference in Quebec City. In this group are (left to right):—D. Roy Cameron, Dominion Forester (Canada); Sir John Orr, eminent British agriculturist (United Kingdom); Dr. L. B. Pett, Chief of the Nutrition Division of Canada's Department of National Health and Welfare, and Dr. E. S. Archibald, Director of the Dominion Experimental Farms and Chairman of the FAO Agricultural Committee.

Matters affecting food problems the world over were discussed informally by these three men as, all around them, preparations were made for the official opening of the FAO Conference. They are (left to right):—Dr. G. S. H. Barton, Canada's Deputy Minister of Agriculture; L. B. Pearson, Chairman of the FAO Conference; and Hon. C. P. Anderson, United States Secretary of Agriculture. Beside them in the hotel lobby is a group of signs showing the names of the thirty nations represented at the conference.

this organization a success. I have no doubt of the competence and zeal of the organization itself under its great Director General. I have some fear, however, that the governments, because of apathy or ignorance, may not give FAO the support it must have, may not implement its recommendations or accept its advice. I can only hope that my fears in this respect will be entirely groundless and that, say five years from now, when I take up the long list of recommendations which we have now accepted as a guide for sound action, I will be able to see written after each one, 'Action already taken by FAO and its member governments'. That, however, will never happen unless FAO gets its message across to the people by every possible method. . . Only if it is made clear to the people what this organization can do will governments give it the backing it must have if it is to succeed."

Sir John Orr stated, on more than one occasion, that one of the greatest factors ensuring the success of FAO would be "a great body of informed public opinion in all member countries in face of which no government would dare *not* to implement the pledges it made at Quebec".

The member for the Philippine Commonwealth, the Hon. Maximo Kalaw, put it this way:

"Let us reach the heart and the mind of the poor rice planter steeped in the mud of his rice paddies—let us visit the pioneer homesteader—let us knock at the hut of the primitive fisherman—let us convince all of them with words and deeds that here, in this historic City of Quebec, an organization was designed and started for their benefit and their uplift and we shall establish a world consciousness and an adherence and a loyalty to a world organization that the greatest armies and the most powerful atomic bombs will not and cannot destroy."

The National Film Board of Canada held daily showings during the conference, featuring documentary films from every country, graphically illustrating the problems of food distribution and consumption, agricultural methods, reforestation and transport.

EDITOR'S NOTE-BOOK

J. D. U. Ward has spent all of his life in Southern England, with the exception of seventeen months in Canada in 1928-29, when he worked on a ranch in Western Alberta. A prolific writer, Mr. Ward has contributed articles to the *London Times*, *Manchester Guardian*, *Country Life*, etc., mainly dealing with his chief interests—the English countryside, natural history and architectural and other antiquities of later historic times, including antique furniture. See also C. G. J. for July 1944, September 1942 and October 1938.

* * *

W. Q. Ketchum, Feature Editor of the *Ottawa Journal*, has made two trips to Greenland and the Eastern Canadian Arctic Archipelago as Historian of these Canadian Arctic expeditions. He has written both prose and verse, and the late Stephen Leacock wrote the introduction to *Requiescant and other Poems*, published in 1919, following service by the author with the Canadian Army in France and Belgium. Mr. Ketchum has been in newspaper work for a quarter of a century, and in 1944 won the annual award of the Ottawa Press Club.

* * *

AMONGST THE NEW BOOKS

Germany's War Crimes and Punishment
by F/O M. H MYERSON
(The Macmillan Company, Toronto, $2.50)

MR. MYERSON is a lawyer and a student of international law and the history and sanctions of law. From this viewpoint he gives an able and very readable study of the vexed question of the trial of war criminals and of those responsible for the outbreak of war. This is, of course, a timely subject as the day of reckoning for Germany's gangster clique approaches, although to the layman, untrammelled by the legalistic viewpoint, the matter would seem to be only one of identification rather than of trial. However, there are to be trials, and Mr. Myerson's essay provides an enlightening background for the drama of retribution which has already commenced. We can only hope that these trials will be more effective than those at Leipzig after the last war, which made a mockery of justice and of punishment. P.E.P.

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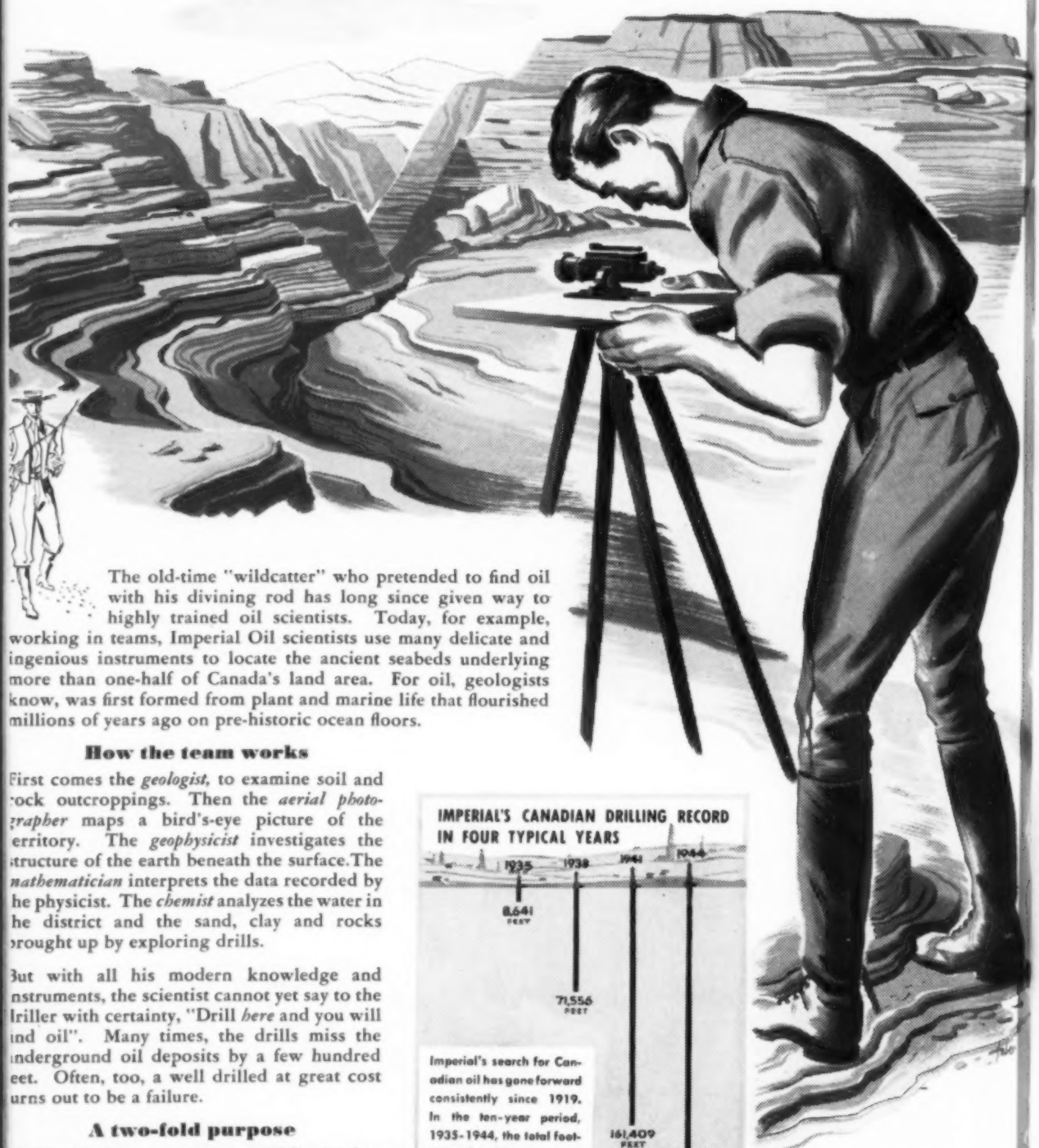


The old-time "wildcatter" who pretended to find oil with his divining rod has long since given way to highly trained oil scientists. Today, for example, working in teams, Imperial Oil scientists use many delicate and ingenious instruments to locate the ancient seabeds underlying more than one-half of Canada's land area. For oil, geologists know, was first formed from plant and marine life that flourished millions of years ago on pre-historic ocean floors.

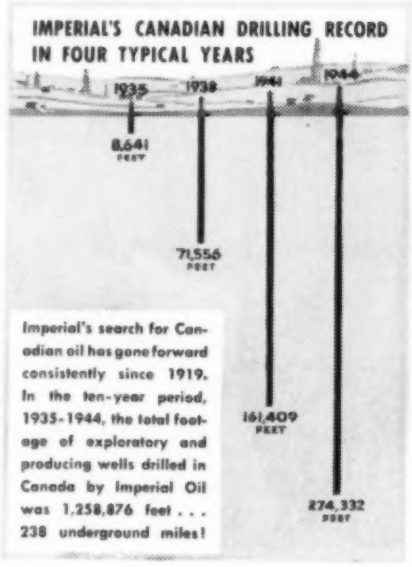
How the team works

First comes the *geologist,* to examine soil and rock outcroppings. Then the *aerial photographer* maps a bird's-eye picture of the territory. The *geophysicist* investigates the structure of the earth beneath the surface. The *mathematician* interprets the data recorded by the physicist. The *chemist* analyzes the water in the district and the sand, clay and rocks brought up by exploring drills.

But with all his modern knowledge and instruments, the scientist cannot yet say to the driller with certainty, "Drill *here* and you will find oil". Many times, the drills miss the underground oil deposits by a few hundred feet. Often, too, a well drilled at great cost turns out to be a failure.

A two-fold purpose

Yet year in and year out, Imperial Oil scientists continue their search for Canadian oil with a two-fold purpose . . . to provide Canadians with more than 500 useful petroleum products . . and to help Canada achieve ever greater oil independence by development of her own petroleum resources.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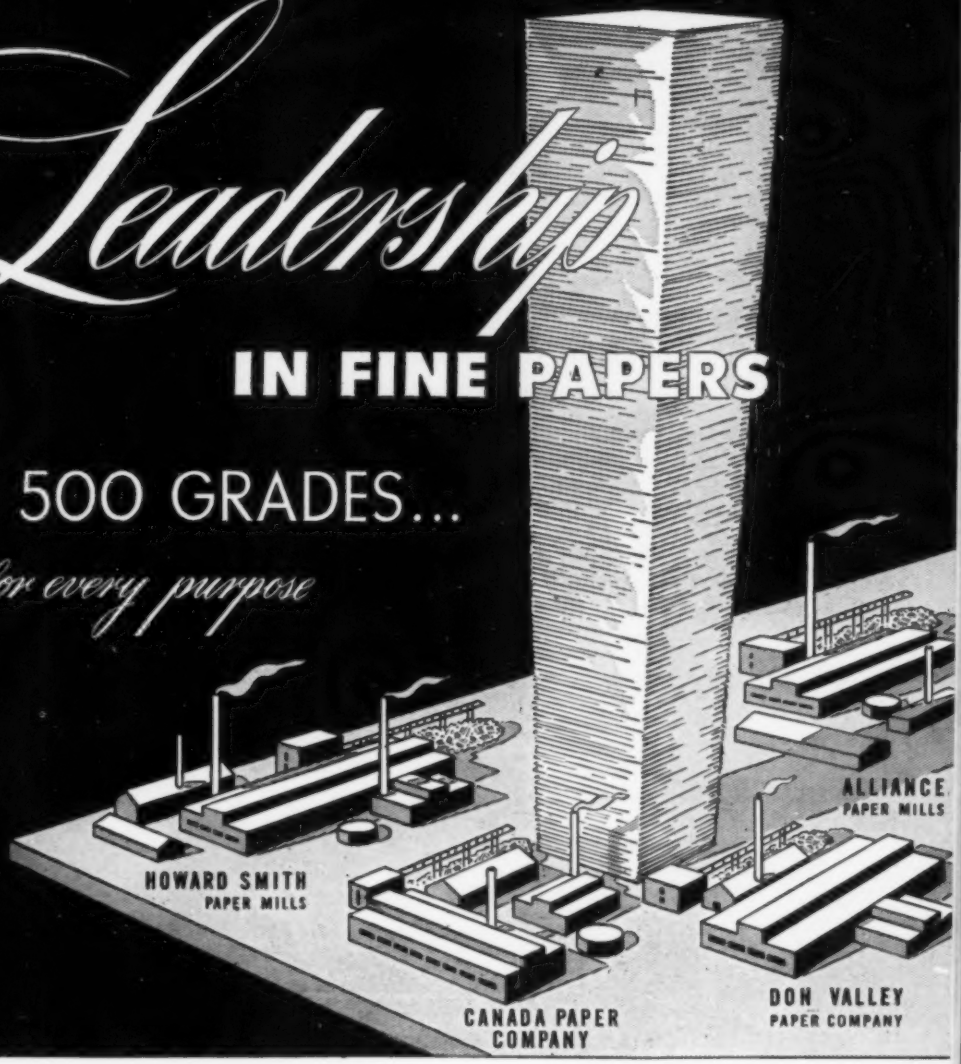

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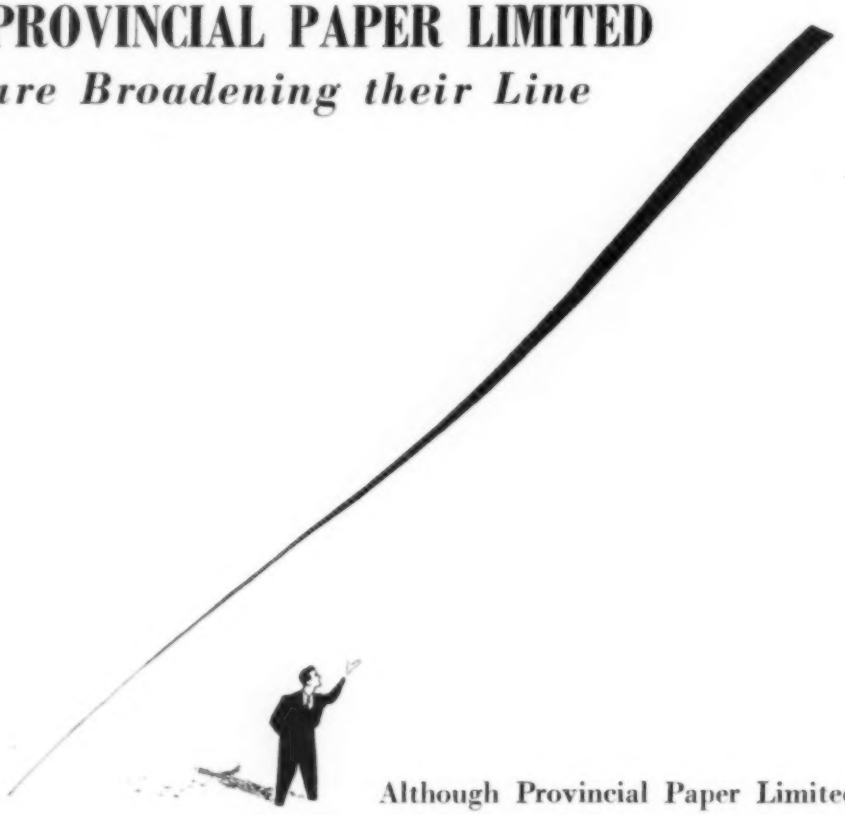

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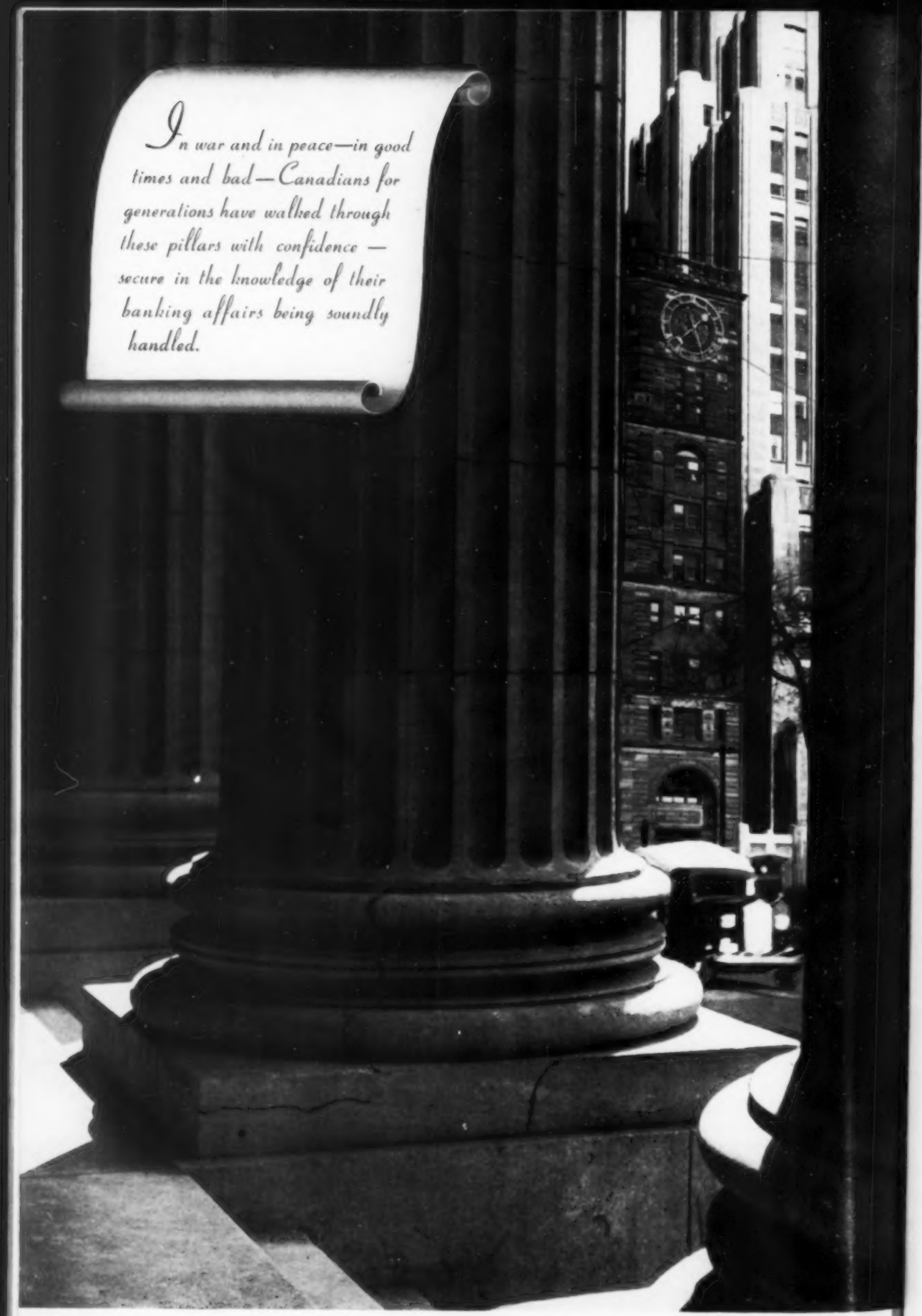
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